MARKET FORECAST

U.S. Applications Solutions Market

1995-2000

U.S. Market Analysis Program

U.S. Applications Solutions Markets

1995-2000

INPUT®

INPUT®

Clients make informed decisions more quickly and economically by using INPUT's services. Since 1974, information technology (IT) users and vendors throughout the world have relied on INPUT for data, research, objective analysis and insightful opinions to prepare their plans, market assessments and business directions, particularly in computer software and services.

Contact us today to learn how your company can use INPUT's knowledge and experience to grow and profit in the revolutionary IT world of the 1990s.

SUBSCRIPTION SERVICES

- Information Services Markets
  - Worldwide and country data
  - Vertical industry analysis
- Systems Integration/Professional Services Markets
- Client/Server Software
- Outsourcing Markets
- Information Services Vendor Profiles and Analysis
- Electronic Commerce/Internet
- U.S. Federal Government IT Markets
- IT Customer Services Directions (Europe)

SERVICE FEATURES

- Research-based reports on trends, etc. (More than 100 in-depth reports per year)
- Frequent bulletins on events, issues, etc.
- 5-year market forecasts
- Competitive analysis
- Access to experienced consultants
- Immediate answers to questions
- On-site presentations

DATABASES

- Software and Services Market Forecasts
- Software and Services Vendors
- U.S. Federal Government
  - Procurement Plans (PAR, APR)
  - Forecasts
  - Awards (FAIT)

CUSTOM PROJECTS

For Vendors—analyze:

- Market strategies and tactics
- Product/service opportunities
- Customer satisfaction levels
- Competitive positioning
- Acquisition targets

For Buyers—evaluate:

- Specific vendor capabilities
- Outsourcing options
- Systems plans
- Peer position

OTHER SERVICES

Acquisition/partnership searches

INPUT WORLDWIDE

Frankfurt
Perchstatten 16
D-35428
Langgöns
Germany
Tel. +49 (0) 6403 911 420
Fax +49 (0) 6403 911 413

London
Cornwall House
55-77 High Street
Slough, Berkshire
SL1 1DZ, England
Tel. +44 (0)1753 530444
Fax +44 (0)1753 577311

New York
400 Frank W. Burr Blvd.
Teaneck, NJ 07666-6810
U.S.A.
Tel. 1 (201) 801-0050
Fax 1 (201) 801-0441

Paris
24, avenue du Recteur
Poincaré
75016 Paris
France
Tel. +33 (1) 46 47 65 65
Fax +33 (1) 46 47 69 50

San Francisco
1881 Landings Drive
Mountain View
CA 94043-0848
U.S.A.
Tel. 1 (415) 961-3300
Fax 1 (415) 961-3966

Tokyo
6F#B, Mitoshiro Bldg.
1-12-12, Uchikanda
Chiyoda-ku, Tokyo 101
Japan
Tel. +81 3 3219-5441
Fax +81 3 3219-5443

Washington, D.C.
1921 Gallows Road
Suite 250
Vienna, VA 22182-3900
U.S.A.
Tel. 1 (703) 847-6870
Fax 1 (703) 847-6872

INTERNATIONAL IT INTELLIGENCE SERVICES

Published by
INPUT
1881 Landings Drive
Mountain View, CA 94043-0848
United States of America

**U.S. Information Services Markets
Analysis Program**

*U.S. Applications Solutions Markets
1995-2000*

Table of Contents

List of Exhibits

(BLANK)

Introduction

This report is one of a series of market analysis reports prepared each year by INPUT for the key segments (product/service categories) of the U.S. information services industry. These product/service categories are:

1. Systems Software Products
2. Applications Software Products
3. Turnkey Systems
4. Professional Services

5. Systems Integration
6. Outsourcing
7. Processing Services
8. Network Services

Exhibit I-1 defines INPUT's information services industry structure.

Exhibit I-1

Information Services Industry Structure

Systems Software Products	Applications Software Products	Turnkey Systems	Professional Services	Systems Integration	Outsourcing	Processing Services	Network Services
- Mainframe	- Mainframe	- Equipment	- Consulting	- Equipment	- Platform Operations	- Transaction	- Electronic Information Services
- Minicomputer	- Minicomputer	- Software Products	- Education and Training	- Software Products	- Applications Operations	- Utility	
- Workstation/ PC	- Workstation/ PC	- Professional Services	- Software Development/ Maintenance	- Professional Services	- Desktop Services	- Other	
			- Other		- Network Management		
					- Applications Management		
					- Business Operations		

Source: INPUT

A
Purpose and Organization

1. Purpose

This report analyzes the applications solutions market, which comprises the applications software products and turnkey systems product/service categories of the U.S. information services industry.

- The report includes five-year forecasts and analyses, an assessment of market drivers, analysis of competitive trends, and identification of leading vendors.

- The report assesses trends and events within the U.S. economy, the U.S. information services industry, and the applications solutions product/service category to provide the reader with a comprehensive foundation for understanding this market sector and for anticipating future directions.

The report provides readers with insights and information that will help them:

- Understand the forces shaping the market

- Develop internal corporate financial projections

- Identify new markets and product and services opportunities

- Assess competitive trends

- Determine potential market directions

- Prioritize investments

2. Organization

This report is organized as described in Exhibit I-2. Each product/service category report within the Market Analysis Program follows this format. The industry and cross-industry sector reports follow a very similar format.

Exhibit I-2

Market Reports Format

I.   Introduction
   • Introduction and definition of the product/service category and its substructure or segments

II. Executive Overview
   • Synopsis of the entire report, written at the end of the year

III. Information Systems Environment
   • The information systems environment and user perspective as it relates to the specific product/service category or market

IV. Trends and Issues
   • An assessment of the product/service category from the vendor point of view

V.   Market Forecast
   • Presentation of the information services market forecast by product/service category and submode

VI. Competitive Environment
   • Discussion of the competitive environment for information services within this product/service category with market share analysis and vendor profiles

VII. Conclusions and Recommendations
   • Summary of risks and opportunities

A.   Forecast Database
   • A detailed forecast by product/service category, submode, and industry/cross-industry sector. Contains a reconciliation to the previous year's forecast

Source: INPUT

B
Scope and Methodology

1. Scope

This report addresses the U.S. information services industry for the applications solutions market. It includes user expenditures that are noncaptive and generally available to vendors. Many large organizations have portions of their information services requirements satisfied by internal divisions. The resulting expenditure is not available for competitive bid by the general vendor community and is not included in INPUT's projections.

Exhibit I-3 describes the applications solutions market structure.

Applications Solutions Market Structure

```
                        ┌──────────────────────┐
                        │ Applications Solutions │
                        └──────────────────────┘
              ┌──────────────────────┴──────────────────┐
   ┌──────────────────────┐                    ┌──────────────┐
   │ Applications          │                    │ Turnkey       │
   │ Software Products     │                    │ Systems       │
   └──────────────────────┘                    └──────────────┘
```

Cross-Industry

- **Office Systems**
  - Integrated Office Systems
  - Word Processing
  - Desktop Publishing
  - Graphics

- **Accounting**
  - General Ledger
  - Accounts Payable
  - Accounts Receivable
  - Billing/Invoicing
  - Costing
  - Fixed Assets
  - International Accounting
  - Purchasing
  - Taxation

- **Human Resources**
  - Human Resources Management
  - Payroll
  - Benefits

- **Education and Training**
  - Computer-Based Training
  - Authoring Languages

- **Planning and Analysis**
  - Executive Information Systems
  - Financial Modeling and Planning
  - Spreadsheets
  - Project Management

- **Engineering and Scientific**
  - Computer-Aided Design and Engineering
  - Structural Analysis
  - Mathematics/ Statistics/ Operations Research
  - Mapping

- **Other Cross-Industry**
  - Telemarketing
  - Sales Management
  - Electronic Publishing

Industry-Specific

- Discrete Manufacturing
- Process Manufacturing
- Transportation Services
- Utilities

- Retail Distribution
- Wholesale Distribution
- Banking and Finance
- Insurance
- Health Services
- Education
- Business Services
- Federal Government
- State and Local Government
- Miscellaneous Industries

Source: INPUT

a. Applications Software Products

An applications software product is packaged software purchased for in-house computer systems.

- Industry-specific applications software products perform functions related to fulfilling business or organizational needs unique to a specific vertical market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping and automobile dealer parts inventory.

- Cross-industry applications software products perform a specific function that is applicable to a wide range of industry sectors. Applications include payroll and human resource systems, accounting systems, word processing and graphics systems.

User expenditure forecasts include lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at users' sites. Vendor-provided training or support in operation and use of the package, if bundled in the software pricing, is also included.

Expenditures for work performed by organizations other than the package vendor are counted in the category of professional services. Fees for work related to education, consulting and/or custom modification of software products are counted as professional services, provided such fees are charged separately from the price of the software product itself.

User expenditures on applications software products purchased for resale by other product/service categories—namely turnkey systems vendors, VARs (value-added resellers) and systems integrators—are excluded from applications software forecasts. However, where turnkey systems vendors have unbundled their products and sell applications software separately from the hardware, the applications software expenditures are included in applications software forecasts. Applications software products sold through other channels, however, such as through computer retailers, are included in the user expenditure forecasts.

b. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged or custom applications software into a single system developed to meet a specific set of user requirements. The turnkey vendor adds value in software and support services, often providing the applications software and customizing services. Most CAD/CAM systems and many small business systems are turnkey systems.

Hardware vendors that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

The distinction between a turnkey system vendor and a value-added reseller (VAR) has become fuzzy, and the two terms are used interchangeably. IBM invented the term value-added reseller in the mid-1980s when it introduced its first workstation. It wanted to emphasize the value-added aspect of this distribution channel rather than sell its workstations through original equipment manufacturers (OEMs) that bring to mind added value in the sense of customization and services.

Increasingly, turnkey systems vendors/VARs also provide systems integration services, acquiring software products as well as equipment from other vendors.

As with applications software products, turnkey systems are divided into two categories: industry-specific systems and cross-industry systems.

2. Methodology

INPUT's methodology for market analysis and forecasting is summarized in Exhibit I-4. As in past years, INPUT has continued to survey information services vendors to determine their U.S. information services revenues, and to query information systems organizations about expenditures and outside services acquisition plans.

Exhibit I-4

INPUT Research Methodology

I. Base Year

Vendor Revenue Surveys

IS Industry Research

Data Cleansing

User Expenditure Survey

Projecting Sample to Industry

8 Product/ Service Categories

Aggregation of Vendor Revenues

22 Vertical and CI Markets

Adjustment for Distribution Channels

User Expenditures

1993 Base Year

II. Market Forecasts

User Planning Survey

Forecasts

22 Vertical and Cross-Industry Markets

Vendor Planning Survey

Reconciliation to Prior Year

8 Delivery Modes

5-Year Forecasts

22 Vertical and Cross-Industry Markets

Source: INPUT

INPUT's annual forecasting process is broken into two major parts: base-year expenditure calculations and market forecasts. Each is briefly described below.

a. Base-Year Expenditure Calculations

- INPUT determines previous-year information services revenues for the eight product/service categories and 22 industry and cross-industry sectors for hundreds of vendors. Estimates rely upon interviews, public data and INPUT's own estimates.

- The initial data is projected to represent the entire information services industry.

- Adjustments are made to eliminate duplications due to distribution channel overlap and to assure that captive information services expenditures are not included.

- The result is a base-year (1994) user expenditure for each of the 22 vertical and cross-industry sectors and the eight product/service categories.

b. Market Forecasts

In the forecasting step, INPUT surveys information systems executives to determine their projected expenditure levels, both in aggregate and for each of the outside information services categories.

The result is a five-year forecast for each of the 22 vertical and cross-industry sectors and the eight product/service categories.

To complete the process, INPUT reconciles its new forecasts with those from the previous year. Differences due to market restructuring and other factors are explained. One may use these projections to track INPUT's forecasts from year to year.

INPUT forecasts are presented in current dollars (i.e., 2000 market sizes are in 2000 dollars, including inflation forecasts). In developing the five-year forecasts, INPUT has incorporated economic assumptions for the U.S. economy as a whole.

The GDP and GDP deflator growth rates used in INPUT's market projections for 1995 through 2000 are from the CONSENSUS^tm forecast, a product of Blue Chip Economic Indicators of Sedona, Arizona. The Blue Chip CONSENSUS forecast is derived from a panel of economists representing leading financial, industrial and research firms across the U.S. and has an impressive record of balanced and accurate projections.

II
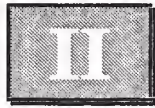
Executive Overview

The applications solutions market is defined by INPUT as two delivery modes: applications software products and turnkey systems.

In this Executive Overview, INPUT provides a summary of trends and issues that will have an impact applications solutions over the next five years. This chapter presents overall growth projections for applications software products and turnkey systems, describes the competitive environment and makes recommendations to vendors on product and services strategic development.

A

Information Technology Trends

Major trends that will impact the direction of applications solutions products and services over the next five years are summarized in Exhibit II-1.

Exhibit II-1

Applications Solutions Trends and Issues

- Continued migration to client/server solutions
- Focus on business process reengineering
- Increased use of outside products and services
- Expanding role of the Internet
- Changing buyer
- Marketing approaches and pricing

Source: INPUT

1. Continued Migration to Client/Server Solutions

Client/server vendors have enjoyed significant growth in the past two years. In a recent survey of applications solutions vendors conducted by INPUT, most indicated that they are currently providing client/server solutions or are in the process of developing a client/server product. These vendors report that this technology has opened up a new market and revenue source for them.

INPUT believes the market for client/server products will continue to grow in the next five years. Though many companies have made strategic decisions to move in this direction, the complexities involved in implementing significant changes can slow the process. As companies move toward integrated enterprise systems and legacy systems are replaced, client/server applications vendors will see continued growth in their opportunity to provide products.

Client/server developments have resulted in a number of changes. With the ever-increasing power of the desktop workstation, its role within the organization is changing. More processing is being handled at the workstation level, with workstations taking on the role of servers on the network. Vendors need to continue to develop products to integrate into the client/server model.

2. Focus on Business Process Reengineering

In the past several years, many businesses have undertaken business process engineering in a effort to maximize productivity and assure that business operations are focused on addressing primary business goals. This process allows organizations to automate key functions and take advantage of the capabilities of packaged products.

3. Increased Use of Outside Products and Services

Traditionally, companies that have been reliant on computer applications to run their business have been hesitant to look for outside products to address these needs. Manufacturing companies, for example, have had large IS organizations to develop, manage and maintain their systems. Many companies believed that their needs were too unique to be addressed by a packaged product. Others, while open to the concept of purchasing solutions, found that there was little available to address these needs. Such companies have been operating effectively for years with these internally developed systems.

While some of these applications may continue to be best served internally, many large manufacturers, insurers and representatives of other industries are increasingly looking outside the organization for applications solutions. This has been due partly to downsizing of staff in IS departments. However, the move toward client/server computing and use of open systems is making many of these businesses realize that changes are needed. These in-house systems are proprietary and cannot be integrated within a client/server environment. As legacy systems need to be replaced, buyers are looking seriously at third-party options.

4. Expanding Role of the Internet

The last two years have seen tremendous growth of the Internet. INPUT estimates that the number of Internet users will grow from 53 million today to over 250 million in the year 2000. The establishment of the World Wide Web (WWW) has driven increased Internet usage. Mosaic and Netscape are the dominant browsers being used today. Security issues have limited Internet usage primarily to communications and information distribution. However, as these issues are resolved, the Internet will be used for conducting transactions. The Internet/WWW can provide a means for software users to obtain software data prior to sale, documentation, technical support and eventually software on line. The applications solutions provider not only can reduce costs for support and software distribution, but will have opportunities to develop new products as a result of Internet usage.

5. The Changing Buyer

Changes have occurred over the past several years regarding who within a company makes the ultimate applications solutions buying decision. Although IS organizations historically have been responsible for developing and maintaining centralized systems, in the distributed environment of the client/server world today, the buying process has changed. INPUT's research and interviews with applications solutions vendors consistently confirms that while IS may influence purchases in the form of standards developed for the organization, the user has increasingly more involvement in applications solutions purchases.

As IS organizations become smaller, there are limited resources to develop in-house solutions. Because the user does not have the skills or the interest to develop applications, packaged solutions will be increasingly in demand. Applications solutions providers need to tailor marketing approaches and customer service to respond to demands of users in various departments within client companies.

6. Changing Marketing Approaches and Pricing

The applications solutions vendors enjoying successful growth today are using a variety of marketing arrangements to achieve name recognition and market penetration. Distribution through retailers, VARs and systems integrators supplement direct sales to better target product sales to potential user groups.

Vendors who offer a variety of products have been successful leveraging their success in one area to boost sales of other products by offering several products in an attractively priced package. The availability of such suites has become very popular with products such as Microsoft Office and Lotus

Smartsuite. Buyers tend to purchase the suite primarily to obtain one or two products, viewing the other products as being "free." This approach ultimately can drive out the competition offering such products that are not part of a suite.

Today's buyer is looking for solutions that may require systems integration and customization. In order to address buyer concerns, particularly regarding purchases of vertical industry products, the applications solutions vendor needs to supplement software sales with services such as consulting. Many applications vendors recognize the importance of this through the use of in-house consulting groups to support the product. Another important trend is developing liaisons with partners to support customer needs. This type of relationship supports greater credibility in the marketplace.

Market leaders in the software industry have used their stature and success in particular product areas to negotiate for their software to be bundled along with hardware in new PC sales. As hardware vendors compete in the market, the offering of popular software as part of the package increases its attractiveness to the buyer.

Software pricing is going through some dramatic shifts. Heavy competition in certain markets has tended to drive prices downward. The move to client/server computing calls for different pricing schemes than those that have been associated with centralized mainframe systems. Users are demanding options that address the way in which the software is used and the value obtained. Pricing schemes have moved from being hardware-related to user-related. In the user-based scenario, pricing is based on the number of people making use of the software. Some buyers favor pricing based on the actual amount that the software is used. This approach requires a way to measure software usage and bill accordingly. Metering products to address this need are not generally available at this time.

Site licenses have become popular among buyers, allowing all employees at a particular site to have access. Vendors need to be diligent about putting some limitations on what such a license includes, to avoid abuse. As enterprise computing becomes a norm, it will be more and more difficult to relate pricing to size of hardware, individual user or location. Integrated systems will provide applications to users regardless of the device in which the application resides, workstation used or location of the user. Pricing will continue to be a challenge to software vendors and requires careful analysis and negotiation with customers.

B
Market Size

User expenditures for applications solutions are forecast to grow at a 14% compound annual growth rate (CAGR) over the next five years, reaching $92.4 billion in 2000, as shown in Exhibit II-2. This represents a 1% increase from the CAGR in INPUT's 1994 forecast for the applications solutions market.

Exhibit II-2

U.S. Applications Solutions Products Market, 1995-2000
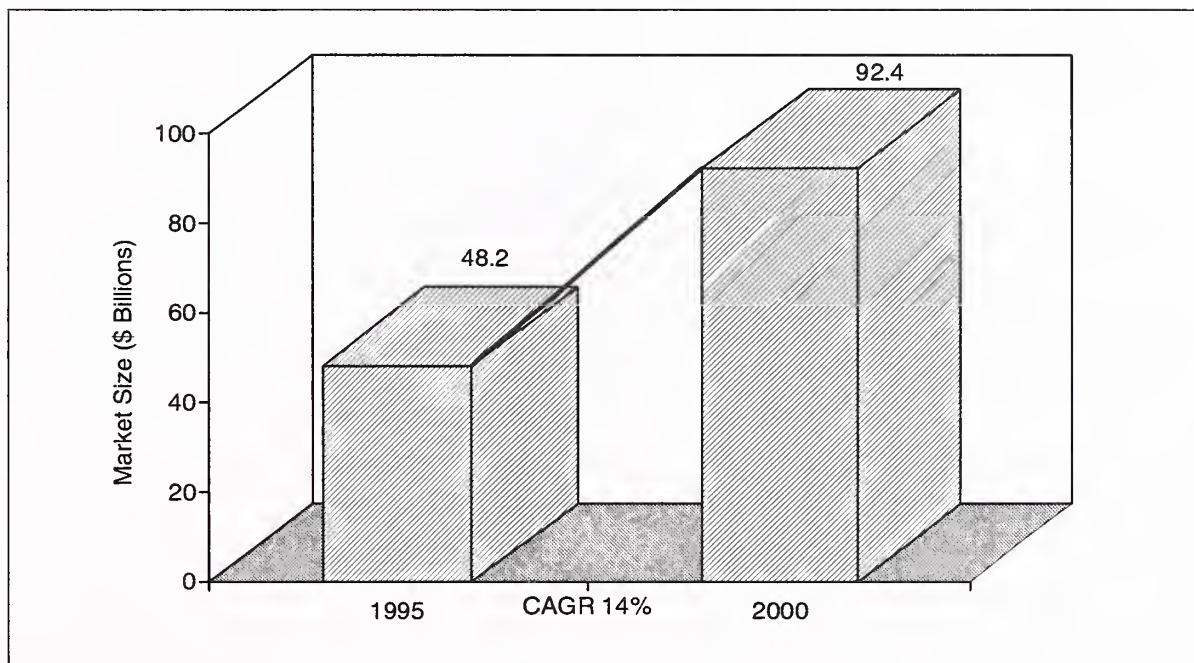
Source: INPUT

The forecasted growth rate for the turnkey systems market increased from 8% to 9% compounded annually (see Exhibit II-3), and the growth rate forecast in the applications software products market segments increased from a 15% CAGR last year to a 16% CAGR in the current forecast. The principal variances in the growth rate projections are related to a slightly higher growth forecast for PC/workstation applications software products and a slight revision upward in the projection for software growth in the turnkey systems market segment.

Exhibit II-3

Applications Software Products and Turnkey Systems, 1995-2000

CAGR
(Percent)

Applications Software

32.1

67.7

16

☒ 1995
☒ 2000

Turnkey Systems

16.1

24.7

9

0   20   40   60   80   100

Market Size ($ Billions)
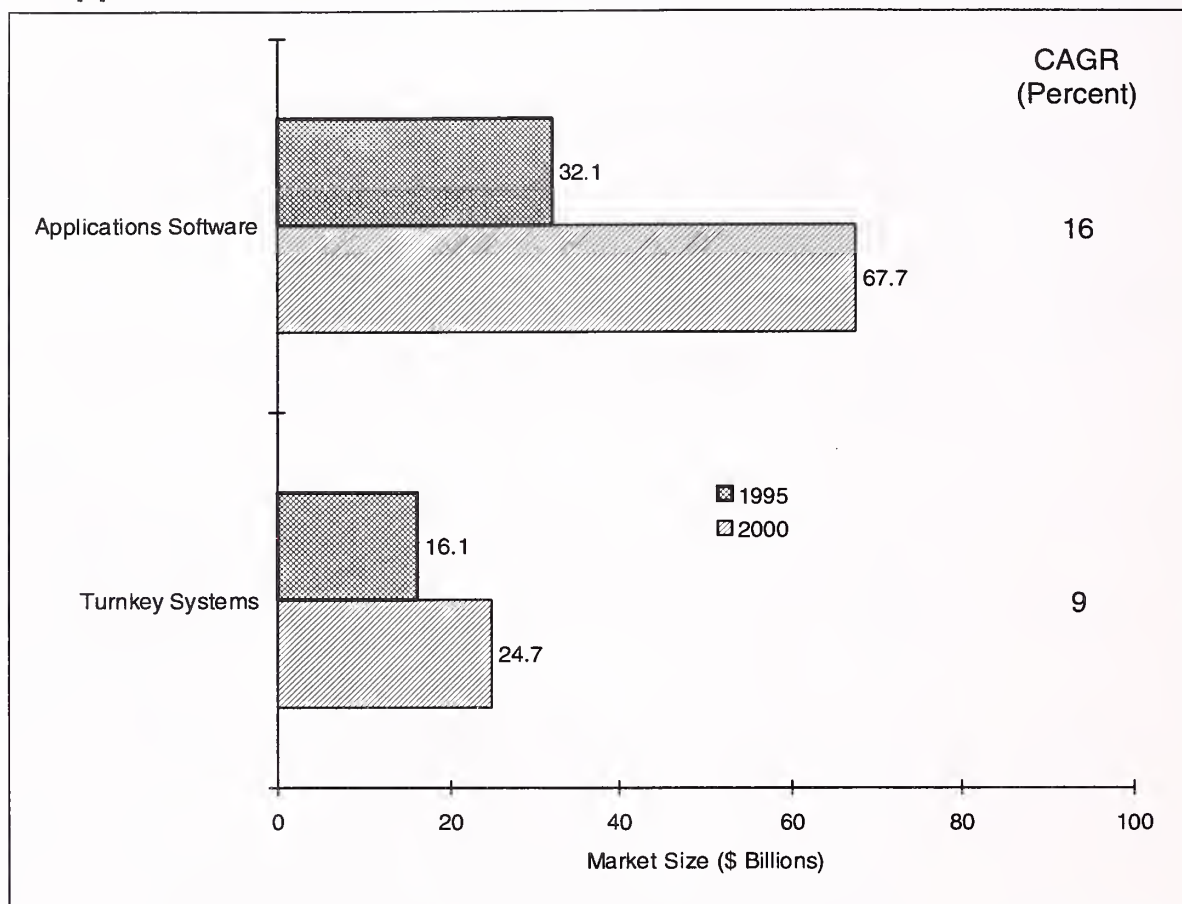
Source: INPUT

A growth impetus for the applications software products market will continue to be client/server applications and continued growth in the use of the Internet, particularly in conducting transactions.

The two delivery modes, applications software products and turnkey systems, will continue to converge over the next five years. A vertical marketing approach, leveraging various strategic alliance relationships, will be the most successful for addressing the large in-house corporate application development market. In addition, large vendors can leverage their marketing and support infrastructure by reselling independent software vendor products.

C

Vendor Competition

While applications solutions companies continue to evolve through entrepreneurial ventures, this industry is becoming increasingly dominated by the largest of its ranks. It was reported in *Software Magazine* in May of this year that "Combined, the Top 10 (software) firms represented $15.1

billion, or 63% of the 1994 total of $24 billion." Microsoft has become to the software industry what IBM has been to the hardware industry.

Industry giants heavily influence the direction of their particular applications software product markets. For example, companies such as Lotus (now part of IBM) and Borland have realized revenue losses due to the dominance of Microsoft in the desktop products arena.

Applications solutions vendors that have focused on open, client/server solutions have been rewarded handsomely for their efforts. This includes companies such as SAP AG, PeopleSoft, BAAN, a provider of financial and manufacturing applications and business objects, a provider of decision support solutions. The tremendous interest in the Internet points to the growth potential for applications solutions vendors that can address needs in this market.

The trend toward increased market share for large vendors will probably continue, as costs of product development, marketing and support accelerate. However, new technology developments will also support growth for entrepreneurial ventures. The success of applications solutions vendors, such as PeopleSoft, attests to continuing possibilities for entrepreneurial firms to succeed in an environment of large, well-entrenched competitors.

However, several factors increase the difficulty of competing in the applications solutions market. First, products are increasing in complexity, especially in the client/server environment, which affects new product development costs. Second, software prices have been declining while product support costs increase due to the sophistication of new products. Third, the applications solutions market is becoming saturated in a number of product areas, requiring greater marketing sophistication.

The more successful turnkey systems vendors today are those who have transitioned through the proprietary phase to open systems hardware platforms. For the longer term, turnkey systems vendors will need to focus more on open systems software solutions and professional services.

D

Conclusions and Recommendations

Exhibit II-4 outlines INPUT's conclusions for vendors focused on providing applications solutions.

Exhibit II-4

Conclusions

- Healthy growth in applications software market
- Modest/steady growth in turnkey systems
- Market driven by client/server and open systems products
- The Internet offers unique opportunities

Source: INPUT

1. Continued Growth in Applications Software

INPUT's forecast indicates that the applications software market will continue to grow at a healthy rate over the next five years, offering opportunities to vendors of these products. While the market for certain products is maturing, particularly for cross-industry products, opportunities for vendors of products specific to vertical markets will remain strong. In the cross-industry area, constantly changing technology and standards offer opportunities to vendors.

2. Modest Growth in Turnkey Systems

General industry trends emphasize flexibility in choosing applications software to accommodate various hardware platforms. Turnkey systems integrate hardware with software to address specific applications requirements. Although growth will be more dramatic for applications software, turnkey systems will continue to emphasize specialized requirements that can best be addressed through tight integration of hardware and software. However, for this market to continue to grow, it must develop its products to conform with standards and integrate into enterprise-wide client/server systems. Turnkey vendors need to be on the cutting edge of new technology developments and to plan new products that offer the advantages of applications software solutions.

3. Market Driven by Demand for Client/Server Products and Open Systems

Applications solutions trends are migrating continually from proprietary solutions to a more open environment. Though this migration takes time, it is clear that new product development planning must consider users need to operate in an open environment and conform to related standards.

As evidenced by the success of the early providers of client/server products, users are clearly moving in this direction. Although some exceptions exist in specific areas where alternative solutions are long standing, this approach has gained momentum. As many of the applications solutions vendors that

INPUT interviewed said, their customers have embraced this approach and expect product offerings in this area. Many vendors have developed products in the client/server arena and most indicate that it has been a big boost to their business. The market for standard client/server products is not expected to be saturated for some time.

4. The Internet Offers a Unique Opportunity for Applications Solutions Vendors

The intense interest in the Internet offers new opportunities for applications solutions vendors. As security issues get resolved and users take advantage of the World Wide Web, users will have increased needs for new types of software. Software providers have opportunities related to obtaining strategic information, marketing their own products and distributing their products over the Internet. In addition, there will be demand for new types of applications solutions products to make use of the Internet.

5. Recommendations

Based on the conclusions described above, INPUT has several recommendations for vendors of applications solutions. These are listed in Exhibit VII-2 and are described below:

Exhibit II-5

Applications Solutions Recommendations

- Product development strategy should embrace client/server and open solutions
- Take advantage of expanded marketing opportunities
- Plan now for product distribution and support over the Internet
- Develop creative pricing strategies
- Provide more industry-specific solutions

Source: INPUT

6. Product Development Strategy Should Embrace Client/Server and Open Solutions

Vendors need to develop products to operate in a client/server environment and to address the growing need for open solutions that are platform independent. Many companies in industries such as manufacturing and insurance have made strategy decisions to move in this direction, but the process of implementing such changes takes place slowly and is occurring over time. This is creating a strong market for client/server products for the next several years. Vendors must develop products that can address these needs as they evolve.

The move toward standards and open systems has been a slow process, complicated by various product introductions that have taken place along the way. Vendors need to be aware of de facto standards as they develop and be ready to offer products that conform to those standards.

Buyers today seek solutions that will work on multiple platforms and operating systems. Product standardization will make it easier for buyers to use technology as a tool to support their businesses while insulating them from the technical aspects of computer systems.

In order to support a multivendor and multiplatform strategy, turnkey vendors must either diminish reliance on hardware or support a broad range of hardware platforms. Vendors are under increasing pressure to open their systems. Customers may want turnkey solutions, but they don't want to be locked into what they perceive as proprietary solutions rather than open systems alternatives.

7. Take Advantage of Expanded Marketing Opportunities

Although direct sales of software continues to be the preferred marketing approach of application solutions vendors today, the changing market demands that alternatives be offered to reach potential buyers. Alternate channels of distribution include liaisons with systems vendors, systems integrators, distributors, consultants and VARs. Strategic alliances allow vendors to team up with providers of complementary products and services to more closely meet customer requirements for a total solution. Relationships with industry experts can open doors to new opportunities and provide more product credibility in the marketplace.

In particular, computer systems and application development tool vendors are strong partners, because they provide the interconnectivity/operability requirements across platforms in a distributed processing environment. Application development tool vendors can function as turnkey providers by combining software and industry expertise from third parties and reselling the combined product in a total solutions offering.

Bundling of software with hardware sales is a popular trend. Vendors need to insure that alliances with hardware vendors are maintained to strengthen competitive positioning.

Applications solutions vendors can also profit from developing relationships with key customers that can be used for reference selling to other businesses in that industry.

8. Plan Now for Product Distribution and Support Over the Internet

Internet usage is growing exponentially with each passing month. Companies that have set up home pages or other uses of the network for experimental purposes have been surprised to learn the extent to which users are making use of the information available and responding to inquiries over the Internet. Recent advances in security promise to spur even greater use of the Internet. Many businesses, in a variety of industries, are preparing now for handling transactions over the Internet. Banking institutions are preparing to allow customers to use the Internet to conduct banking business. Likewise, applications solutions providers need to be poised to move ahead with more aggressive use of the Internet, as security becomes less of an issue in the future.

The ability to actually distribute software or offer software trials over the Internet provides tremendous flexibility to the buyer and has the capability of stimulating overall growth. Those vendors that offer flexibility in product distribution will be at an advantage, particularly for products that are highly competitive. Yet there are a number of technical and functional issues to be addressed in order to make this a reality. INPUT believes that applications vendors must begin working now on resolving such issues, and be prepared to move forward as soon as feasible.

In addition, the Internet offers the capability of providing technical support and minimizing the labor-intensive support function that is in place in many companies today.

9. Develop Creative Pricing Strategies

There is a need for more flexible pricing structures that take into account application usage. Though site licenses provide large businesses with flexibility, vendors need to be watchful that the pricing considers the extent of usage within that site. Physical location of the applications, user workstation or individual using the application will become less and less significant. Users will be accessing the software from various company and other locations. Software vendors needs to perform some up-front analysis regarding their clients' proposed use of software. Licenses should take this into account and have specific limits on them. Likewise, vendors should have mechanisms in place to expand licenses as needed, thereby generating increased revenue to the vendor. Clients will continue to have expanding needs and the successful vendors will maintain an ongoing relationship to position themselves to address expanding opportunities.

Pricing is a complex issue today as new technologies and changes make old pricing structures inapplicable or inequitable. Vendors must continually reevaluate their approach to pricing to stay competitive and achieve adequate profit margins. Sensitivity to user needs will be critical in successful pricing strategies.

10. Provide More Industry-Specific Solutions

One of the big opportunities for software providers today is the potential to provide a prepackaged solution to companies that have previously developed solutions in-house. Historically, companies in manufacturing, insurance, and telecommunications have believed their needs to be too unique to be addressed through packaged software. Indeed, in some industries, such as process manufacturing, very few products were available for that market. However, attitudes have changed with the migration to client/server and many companies in such industries are looking to change their long-standing legacy systems to conform to this environment. Applications solutions vendors need to look carefully at industry solutions that they can provide. By working with their strategic partners to develop a successful product solution with specific customers in that industry, they can develop a success story to market to others, perhaps even using those early success clients as references in their support.

III

Information Systems Environment

A
Background

The information systems environment of today contrasts sharply with the mainframe-based model of several decades ago. These changes are a result not only of advances in hardware and software, but changes in the overall approach to computer management and access. Traditional, centralized computing was primarily controlled by corporate management information systems departments. Access to information was primarily through this organization and its format limited by the hardware/software in place.

Just as the PC and its associated user friendly operating systems (Macintosh and Windows) revolutionized the way computing and communications were handled in the business arena in the 1980s and early 1990s, client/server computing represents the next dramatic wave in information systems. The client/server model, defined as the ability of the client/user to directly access computer information resources both vertically and horizontally across multiple corporate computing platforms, emerged from the networking of desktop computers in the latter half of the 1980s.

This difference allows the management of data and access to data to be distributed throughout the organization. Information services professionals continue to have an important role in information management in today's corporations. However today, unlike in previous eras, users are gaining access to the information they need in the format needed due to the combined capability of client/server computing, relational databases and enterprise networks. Workgroups share software, information and files.

Some of the most successful vendors today are those that are leading the market in offering client/server software solutions. Client/server computing, an emerging concept when this report was last written, has clearly become a reality in corporate America today.

B

Industry-Specific Information Systems Environments

INPUT has created and maintains a database containing application system information collected through questionnaire responses and interviews with project managers at various businesses and government agencies in the U.S. Ongoing survey results illustrate a clear shift to distributed processing in some sectors, while other industries continue to be reliant upon legacy mainframe systems. This section discusses the information systems environment in major industry sectors.

1. Discrete Manufacturing Sector

Discrete manufacturing is the largest user of information systems among the industries reviewed. Data collected from companies in the discrete manufacturing sector indicate that financial and manufacturing operations are two application categories in which discrete manufacturers plan to make investments. INPUT's database estimates show nearly half of the planned applications falling into one of these two categories. Other key applications are shown in Exhibit III-1.

Exhibit III-1

Discrete Manufacturing Top Five Applications Planned

1. Financial
2. Manufacturing Operations
3. Infrastructure
4. Engineering
5. Sales/Marketing

Source: INPUT

There are several factors spurring the use of client/server-based application solutions in the discrete manufacturing industry. First, there has been an emphasis on reengineering and restructuring throughout discrete manufacturing companies. In addition, the heavy use of open systems platforms such as UNIX facilitates interconnectivity and interpretability. The implementation of Total Quality Management (TQM) in the manufacturing environment has increased the importance of decision making among worker groups. Finally, there has been increased use of programmable logic controllers (PLCs) to transmit and receive information from shared RDBMSs for implementing statistical process control (SPC) systems.

Discrete manufacturing firms are shifting toward increased use of outside resources to implement new applications. INPUT's database from the past several years continues to show that packaged software is the most frequently used outside resource. Software vendors have been aggressively developing solutions to address the requirements of this industry. Of the 54 software providers recently interviewed by INPUT, 24 sell products specifically developed for this industry, as shown in Exhibit III-2.

Exhibit III-2

Types of Applications Solutions Sold by Survey Respondents
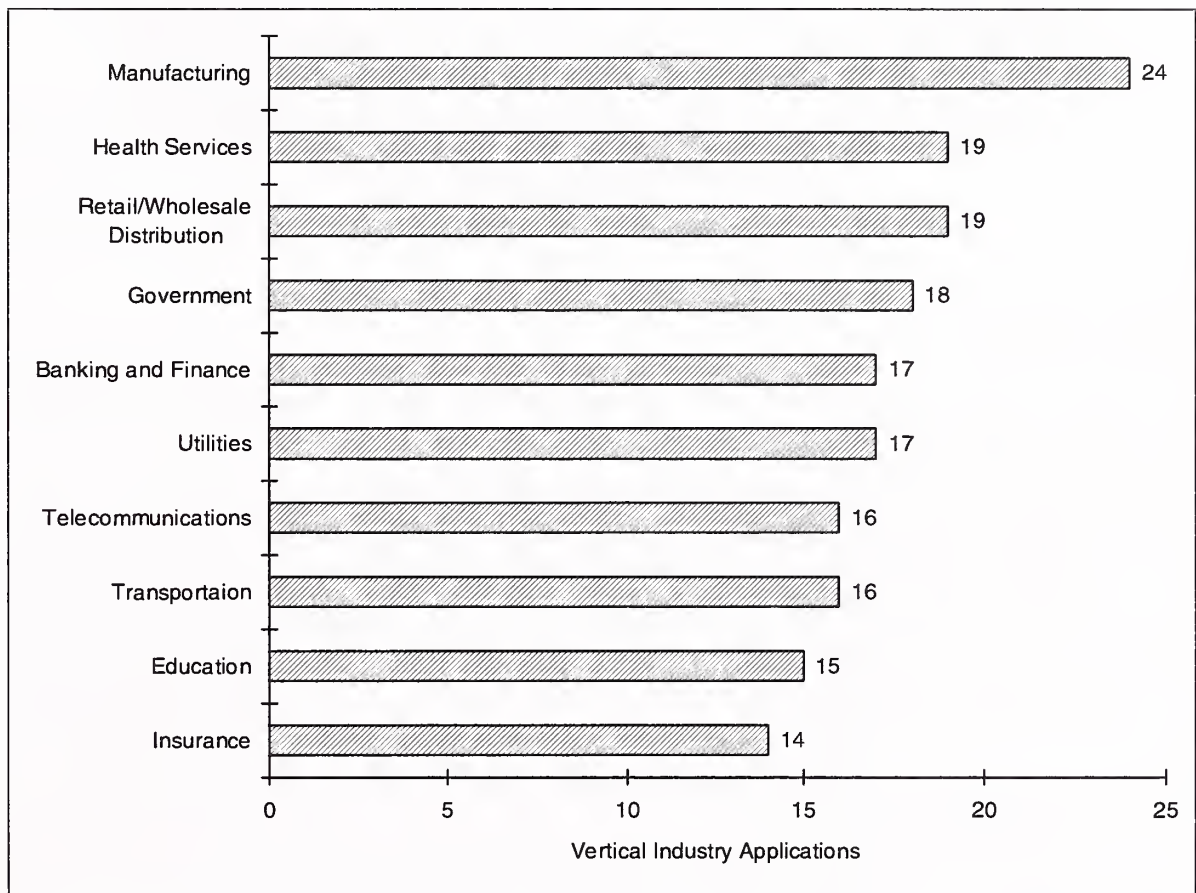
Total respondents = 54. Multiple responses possible.   *Source: INPUT*

Sixty percent of these vendors report that 50% or more of their business is focused on this industry. Issues driving purchase of software reported by vendors are listed in Exhibit III-3.

Exhibit III-3

Discrete Manufacturing Issues Driving Software Purchases

- Business process reengineering
- More control of work flow
- Reducing inventory investment
- Logistics
- Reduce cost
- Compliance with government regulations

Source: INPUT

INPUT's industry survey indicates that in this industry, packaged software is likely to be used for about a third of planned applications. The average size of project for which packaged software was planned was in the $100,000 to $500,000 range. There is a strong move toward client/server architecture in this industry.

Other applications being implemented in this industry include database, personnel, inventory, purchasing and logistics packages.

2. Process Manufacturing Sector

Like discrete manufacturers, process manufacturing companies are restructuring their businesses and likewise their information systems from a centralized to a distributed approach. Workers today have more input to the decision-making process today. This change has been beneficial to process manufacturers by shortening product life cycles and increasing customer satisfaction through improved order receipt-to-shipping cycles.

Previously, business and planning systems were developed internally, partly due to limited availability of third-party products. Today, process manufacturers can take advantage of a number of "customizable" application packages from an increasing number of vendors.

INPUT's survey database of process manufacturing companies showed that 40% of planned applications mentioned by process manufacturing respondents will make use of a workstation or PC alone or as part of a client/server architecture.

Exhibit III-4

Location of Planned Applications in Process Manufacturing

Mainframe
36%

PC/Workstation
Client/Server
40%

Minicomputer
24%
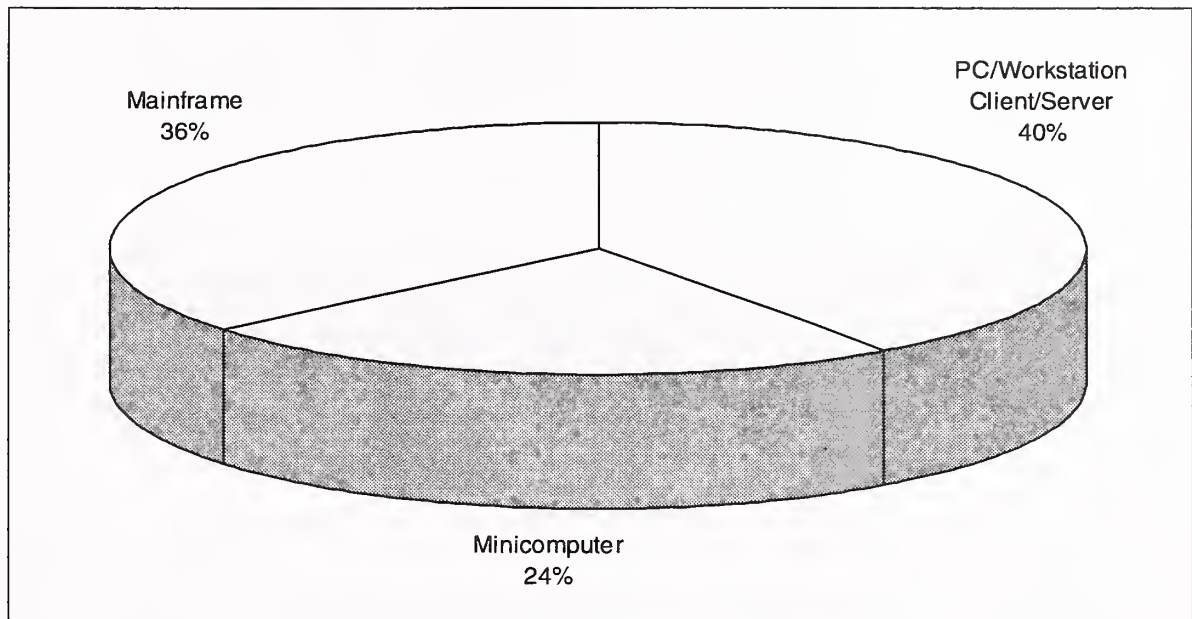
Source: INPUT

Use of outside services to implement new applications is estimated at 35% of applications planned. Of these, use of packaged software is the most frequently mentioned compared to use of systems integrators or other outside services. INPUT believes that process manufacturers are less frequent purchasers of packaged software than discrete manufacturers due to the smaller number of packaged solutions that have been available to this industry in the past. Also, the close integration between the manufacturing process and IS in this industry has biased them toward custom solutions.

Applications mentioned most frequently in user interviews for implementation in a client/server environment are listed in Exhibit III-5.

Exhibit III-5

Process Manufacturing Top Applications Planned for Client/Server

- Personnel
- Logistics
- Sales/Marketing
- Purchasing
- Manufacturing

Source: INPUT

3. Transportation Sector

While the discrete and process manufacturing sectors seem to be jumping on the bandwagon of client/server solutions, the transportation sector tends to be continuing a more mainframe-based approach than other industry sectors. INPUT believes that the main reason for this relates to the heavy reliance on transaction processing in industries such as airlines. These applications do not necessarily require the user manipulation of data and graphical user interfaces that are driving growth in the client/server market. INPUT's current analysis of the transportation sector shows that mainframe solutions are clearly dominant; firms in this sector tend to be high users of professional services; and their use of desktop systems tends to be for prepackaged solutions to solve generic transportation problems rather than for application implementation.

EDI is an important application in the transportation industry. Projects at the majority of companies address the adoption or expansion of EDI capabilities. This has become necessary for companies within the industry to maintain their competitive strength as EDI becomes the preferred way of doing business. In INPUT's database, as shown in Exhibit III-6, transportation showed a higher percentage of EDI use as compared with other industries in general.

Exhibit III-6

Transportation Industry EDI-Related Applications

Not EDI Related
39%

EDI Related
61%

Transportation

EDI Related
36%

Not EDI Related
64%

Other Industries
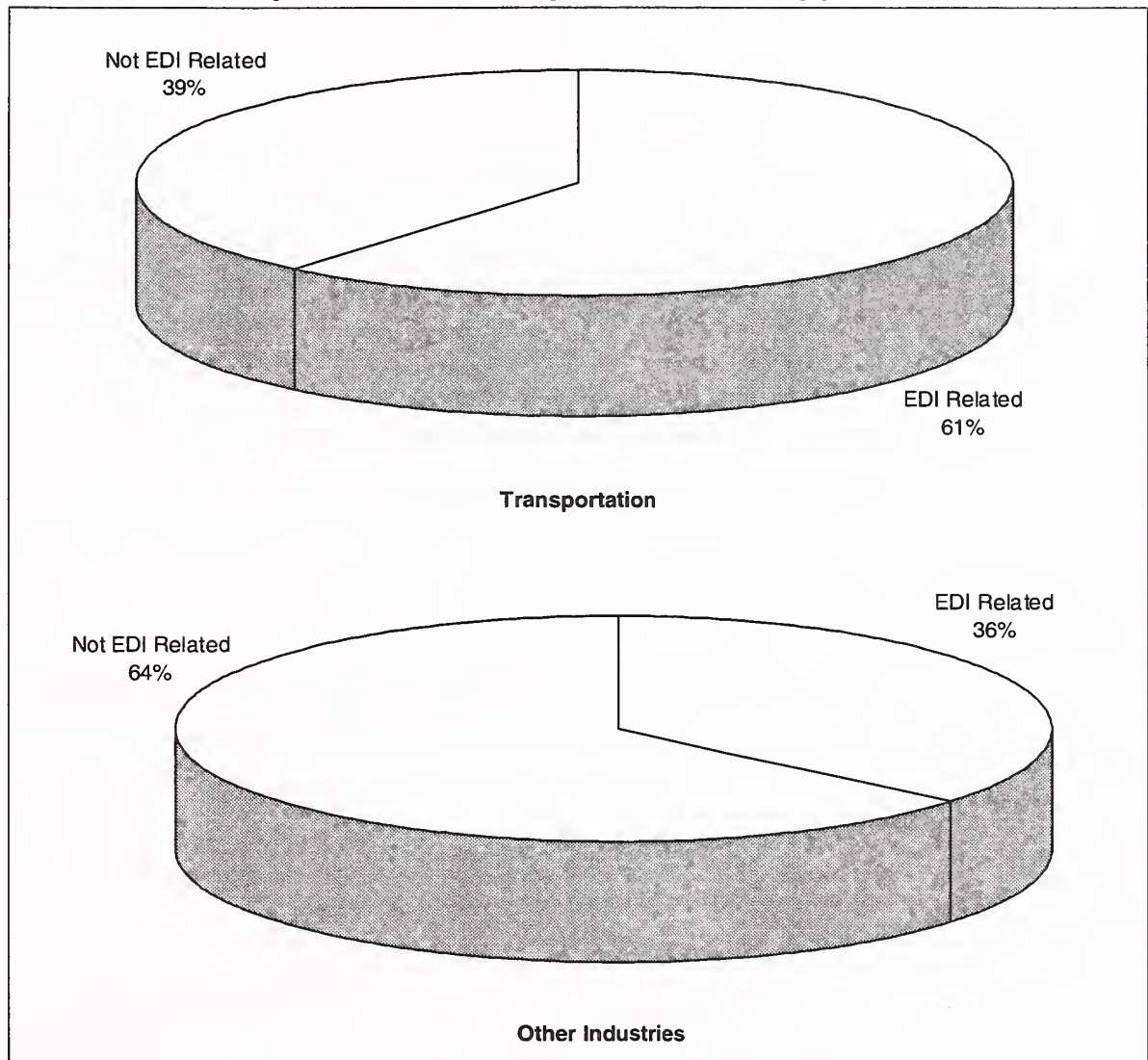
The larger expenditures over time will be in communications applications software, to make use of new data flow with newer telecommunications technology such as cellular and other types of radio network transmission. Other applications areas for railroad and trucking firms include real-time data communicated to central operating sites for monitoring equipment performance and rerouting to better use invested resources and improve customer service.

Applications include: global positioning systems for vehicle tracking; immediate invoicing and communications with other vehicles for scheduling transfers with wireless communications; and electronic toll payments applications.

4. Utilities Sector

Like many other large industries with a long history of computer usage, utilities traditionally have processed data on a centralized basis using mainframe systems. One major driver of this approach was the development of CICS (Customers Information Control System) as the premier mainframe database/data communication enabler of the 1960s and 1970s. In developing CICS, IBM involved several utilities and the resulting product was adopted by most of the larger utilities in the U.S. Another factor influencing the centralization of information systems was that utilities were by definition geographically limited by service territory.

However, in the past few years there has been a clear shift away from utilities' centralized view of information systems, both physically and organizationally. Key application segments for the utilities industry are categorized as commercial (largely accounting), engineering and operations, as shown in Exhibit III-7.

Exhibit III-7

Utilities Industry Key Applications

- Corporate Systems
  - Financial

- Engineering
  - Plant Management

- Operations
  - SCADA Systems/EMS

Source: INPUT

During the 1990s, there has been a trend toward integration of utility information systems, to include not only commercial systems managed by information systems, but also engineering and operations applications that are now outside the corporate systems jurisdiction. A major reason for this integration relates to increased competition in the utilities industry. This drives changes in the information systems area aimed at reducing costs and improving customer service. Utilities are embracing client/server solutions. Increasingly, development responsibility for major systems is being assigned to end-user departments to facilitate accountability.

Another key application is Supervisory Control and Data Acquisition (SCADA) systems that monitor and control the utility network in real time. As such, they are responsible for the network's economical and reliable operation. These are sensor-based systems that feed into a controller, either directly or through a hierarchical control arrangement. Introducing open systems has profoundly affected the SCADA/EMS market in recent years.

Virtually all major suppliers in this turnkey market espoused the benefits of distributed, workstation-based architectures. The cost implication of this approach is often to halve the price of prior systems.

UNIX and open systems applications also show increasing popularity in engineering and operations areas of utilities. This is driven by increasing focus on integrating applications and rapid growth of facilities management systems.

The use of applications software products has grown rapidly in the utilities industry. Cross-industry applications such as stockholder and human resources are the most widely accepted. Another area of growth is financial applications, with an emphasis on the cost accounting needed in the new competitive world of utilities. The use of utility-unique application code, often modified by the utility or the vendor to meet the specific requirement of the individual utility, is becoming a popular approach.

Utility operations organizations frequently refer to their sensor-based control systems as turnkey systems. Small utilities are the core turnkey market in the utilities market sector. Their application set is usually limited to customer information systems, with an emphasis on billing.

5. Insurance Sector

The insurance industry has traditionally supported its systems requirements with centrally managed IS organizations that develop applications solutions in-house for the mainframe environment. Today, IS technologies are playing a crucial role in supporting automation trends such as automated claims processing. Insurance companies are leveraging information technology capabilities to respond quickly to customer needs, target marketing and improve the conduct of business processes. In addition, there is a desire to move technology into the hands of users, to allow agents to obtain needed data, marketing staff to analyze customer trends and customer service staff to serve clients in a timely manner. As in manufacturing, these needs have led to a move toward the use of client/server technology and LANs. Key trends impacting the insurance industry are shown in Exhibit III-8.

Exhibit III-8

Insurance Industry Key Trends Affecting IS Purchasing

- Linking technology to business strategy
- Cost reduction
- Reengineering
- Client/server
- EDI

Source: INPUT

Companies in the insurance industry are expecting technology to support the streamlining of business processes. Technology can speed up the process of responding to customer requests and complaints, to facilitate action.

Increased attention to customer service is driving technology closer to the point of sale. Most insurers who have relied on centralized transaction processing are moving in the direction of distributed systems. To reduce costs and remain competitive, companies are making decisions to consolidate data processing operations, reduce headcount and reduce hardware and software costs. Client/server architecture is becoming the technology of choice to address these concerns. Electronic commerce (EDI) is planned for some applications within this industry.

Applications software is expected to enjoy a healthy rate of growth in the coming years, particularly on workstation platforms. Many insurance companies have long-standing legacy systems developed to meet the business requirements of earlier decades. Though there has been a tendency in the insurance industry for IS organizations to develop their own software, these companies are increasingly looking at the availability of packaged solutions to meet their needs. INPUT's database indicates that a significant number of insurance companies are planning to use packaged software solutions for new applications.

6. Telecommunications Sector

Common carrier applications traditionally have been developed internally, as few vendors have been able to provide application products suitable for the telecommunications industry. On the whole, users have believed that their environment is far too complex for packaged applications. Local exchange carriers and smaller independents that operate their own systems have generally been more receptive to packaged solutions than the large carriers. However, with ongoing regulatory changes occurring in the industry, and the move toward providing content-based information services, the large carriers now indicate they will look more to outside providers for assistance.

Exhibit III-9 summarizes new technologies and their impact on nearly all common carriers. The carriers are driven to consider and adapt those technologies due to external customer demand and internal user requirements.

Exhibit III-9

Issues Having an Impact on Common Carriers

- Decentralization
- Data/systems integration
- Greater customer control
- System flexibility
- Increased information flow
- Underutilized infrastructure

Source: INPUT

As with many industries, the information systems function in common carriers is being decentralized. Decentralization is most prominent in the marketing and customer service departments. Marketing and service are assuming greater responsibility for defining and managing development requirements and projects.

Organizational decentralization and the growing need for integration of data across functional areas are driving a need for the integration of systems. Data about customers and their service status must be available to operational and support departments.

Customers recognize the value of digital technology and the value of many of the services that carriers are beginning to offer. Many customers have demonstrated increased interest in the use of services such as software-defined networks, network management, and virtual digital networks. Customer demands create significant pressure on the carrier information systems organization to develop processes that permit greater customer control of their services. Today, customers want to be able to select specific services to meet their needs and to be able to change such selections quickly and easily. They want custom sets of features and custom-designed billing.

The demand for applications software is being driven by the need for minicomputer and PC/workstation software, and the growing demand for mainframe software in at least three critical areas will become more pronounced over the next several years.

1. Consumer and business applications packages to support new information services offerings will be licensed by RBOCs and other telcos.

2. Software for workstation/PCs is needed to support logistics and maintenance activities. Engineers need to be able to access central systems to obtain cable and circuit diagrams and retrieve information about numbering assignments.

3. Support requirements for imaging and mainframe-based artificial intelligence systems will continue to contribute to significant growth over the next several years. These applications are only beginning to emerge, as carriers implement increasingly sophisticated billing and customer support systems.

C

Cross-Industry Information Systems Environments

INPUT also publishes annual reports on the leading cross-industry information technology markets that involve interviews with users and vendors of products and services in these markets.

Cross-industry applications, by their very nature, lend themselves to being marketed as prepackaged applications software. Certain standard functions are required in products such as office systems, accounting and human resources—regardless of industry. The software industry continues to achieve growth in these areas despite saturation in some of these markets. As business functions and requirements change and technology hardware changes, the market for such generic software products will continue to be strong. The introduction of Windows 95 will spur growth for a number of products as users upgrade to this new operating system. Particular IS trends identified within the cross-industry market sectors are summarized in this section. Three cross-industry market segments—office systems, accounting and human resources—are discussed below.

1. Integrated Office Systems

INPUT divides the integrated office systems sector into six application areas, as shown in Exhibit III-10.

Exhibit III-10

Office Systems

• Word Processing
• Graphics
• Document Imaging
• Desktop Publishing
• Integrated Office Systems
• Electronic Publishing

Source: INPUT

Businesses today are generally moving away from a hierarchical structure. There also has been a dramatic increase in PC connectivity and local-area network (LAN) interconnectivity. These two trends have allowed workers to increase productivity and control operating costs within the office environment. Productivity is improved because workers have quicker access to information and operating costs decrease because workers are sharing common computing assets.

The most significant factor driving the growth of aggregate applications software expenditures for office systems is the changing information systems model. As companies migrate to smaller systems, implement enterprise computing and make use of graphical user interfaces, the need for applications to support these technologies is critical. Applications that were formerly host-based will now be acquired for the PC/LAN or midrange system. Products operating under DOS or Windows 3.1 will be replaced with Windows 95 products as they become available.

A pent-up demand for new products and solutions will drive growth in the workstation/PC platform segment. Applications software products will continue to be the largest most important category of the office systems segment. Innovative, powerful products, such as Lotus Notes and Microsoft Office, will lead the market because they offer network access to suites of applications operating in an integrated manner.

2. Accounting

Given the persuasiveness of accounting across all industry types, it is not surprising that it was one of the first applications to be developed on mainframe computers years ago. Also, despite some industry variances, accounting functions are standard enough to lend themselves to being offered in the form of prepackaged software rather easily. INPUT estimates that accounting represents at least 20-25% of all cross-industry information services expenditures.

As American businesses move toward enterprise computing and client/server environments, it is logical that accounting will be a significant part of this migration. Although there are those companies that believe accounting will still be handled best on the mainframe, software developers such as Ross Systems, and Dun & Bradstreet Software Services, Inc. have developed accounting solutions allowing companies to migrate to a client/server architecture. In fact, some of the early developers of client/server products have focused specifically on the financial function.

Though many believe use of the mainframe for accounting applications will soon be a thing of the past, INPUT believes it is too early to dismiss the mainframe as a viable accounting applications platform. Also, some users

remain skeptical about the value of graphical interfaces in accounting (which is basically a character-based application). User expenditures on mainframe-based accounting packages focus on flexibility, ease of use and client/server capability.

The market for accounting software is expected to grow along with changes in technology. Enterprise computing will require integration and modifications in current products. Operating system changes such as the introduction of Windows 95 will also lead to growth in this area.

3. Human Resources

The growth in the availability of human resource/payroll system software applications over the last several years has been dramatic. The number of programs available has increased to more than 1,500, with an estimated two-thirds of this PC-based software. The strong continued growth of PC-based human resource software applications has been driven by the availability of relatively inexpensive but very powerful relational database technology and advanced software development tools. These tools have allowed developers to bring sophisticated products to market much faster and at a significantly lower cost than was the case for midrange and mainframe-based software.

A major application area within human resources continues to be employee benefits administration. Within the benefits area, flexible benefits administration is the most significant area of change. In the past few years, benefits-oriented applications software products have accounted for more than a third of all human resource software on the market. Vendor-provided products are strongly preferred to in-house human resources/payroll system development in most environments.

Users of human resources systems have grown substantially more sophisticated in the application of technology to their jobs and demand more and better performance from their systems today.

Reengineering of the human resources function has been occurring to increase the efficiency and effectiveness of operations. As companies scale back their middle-management ranks and less staff is available to handle human resources-related matters, more emphasis is placed on automation of human resources recordkeeping and reporting.

IV

Trends and Issues

This chapter discusses the ways in which current trends in information technology affect the applications software products and turnkey systems product/service categories, along with related issues. Section A focuses on trends, Section B discusses the vendor issues and Section C summarizes their impacts. Section D addresses the growing importance of the Internet and its potential impact on the applications solutions market.

A
Information Technology Trends

Current trends in the use of information technology are presented in Exhibit IV-1 and are discussed below:

Exhibit IV-1

Information Technology Trends

- Growth in client/server applications
- Reliance on networking and the Internet
- The changing buyer
- Migration to smaller platforms

Source: INPUT

1. Client/Server Applications

Client/server refers to an architecture that divides application logic and processing across multiple computer equipment platforms for the purposes of improving performance, increasing accessibility, and reducing costs. The client/server trend emphasizes a single, consistent architecture. Client/server vendors position their products as scalable across multiple platforms, with relational database management architectures to facilitate data sharing.

The predictions of client/server technology growth in the early 1990s were not greatly exaggerated. In fact, two of the applications solutions vendors that posted some of the strongest revenue growth in 1995, SAP and PeopleSoft, were companies that have focused their strategies on client/server products.

In a recent survey conducted by INPUT of applications solutions vendors, the majority of those responding indicated that they are currently providing or are developing client/server solutions, as seen in Exhibit IV-2.

Exhibit IV-2

Client/Server Offerings of Survey Respondents

Not Focused on
Client/Server
20%

Offer Client/Server
Products
60%

Developing Product for
Client/Server
20%
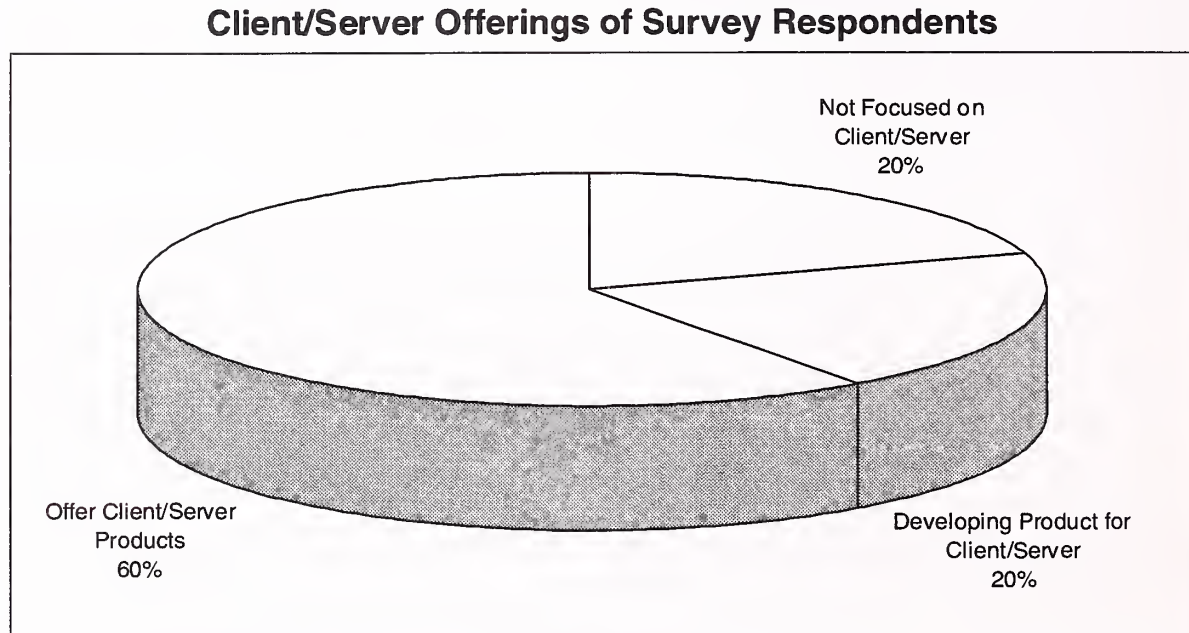
Source: INPUT

The companies that currently offer such solutions indicate that this technology has opened up a new market and revenue source for them. In some cases, companies that have been the early providers of client/server products have reaped the financial benefits of being the "only game in town." As more vendors offer products in the future, price/performance will become more critical.

Client/server developments have resulted in a number of changes. With the ever-increasing power of the desktop workstation, its role within the organization is changing. More processing is being handled at the workstation level, with workstations taking on the role of servers on the network.

The philosophy of client/server computing differs from that of traditional turnkey systems. In client/server environments, where the software resides is transparent and irrelevant to the user. In a turnkey system, software and hardware are tightly integrated. A key question then becomes, will client/server eventually do away with demand for turnkey solutions? Most likely the answer is yes and no. For those turnkey systems offering solutions that can also be acquired through software, it will be difficult to compete with the flexibility and ease of use offered by client/server products. However, turnkey products frequently exist to address a very specific requirement as yet not addressed effectively in the software market. In these instances,

turnkey solutions will still offer an advantage, at least for a period of time. Integration is the key, however, and companies developing client/server solutions will be looking for integration of computing capability throughout the enterprise. Turnkey solutions need to be able to address this requirement.

2. Impact of Networking and the Internet

The implementation of client/server architecture and distributed processing relies on networking products and services to support communication between various devices. Client/server solutions are not possible without relational-based DBMSs, LANs and network integration. Integration of multivendor, multiplatform computing solutions will experience strong growth over the next several years.

No discussion of information technology trends today would be complete without mention of the Internet and the tremendous impact it is just beginning to make on businesses today. The last two years have seen an explosion in the use and growth of the Internet. INPUT estimates that the number of Internet users worldwide will grow significantly in the next five years, as seen in Exhibit IV-3.

Exhibit IV-3

Worldwide Internet Population

250

53

1995   2000

Unduplicated Users ($ Millions)
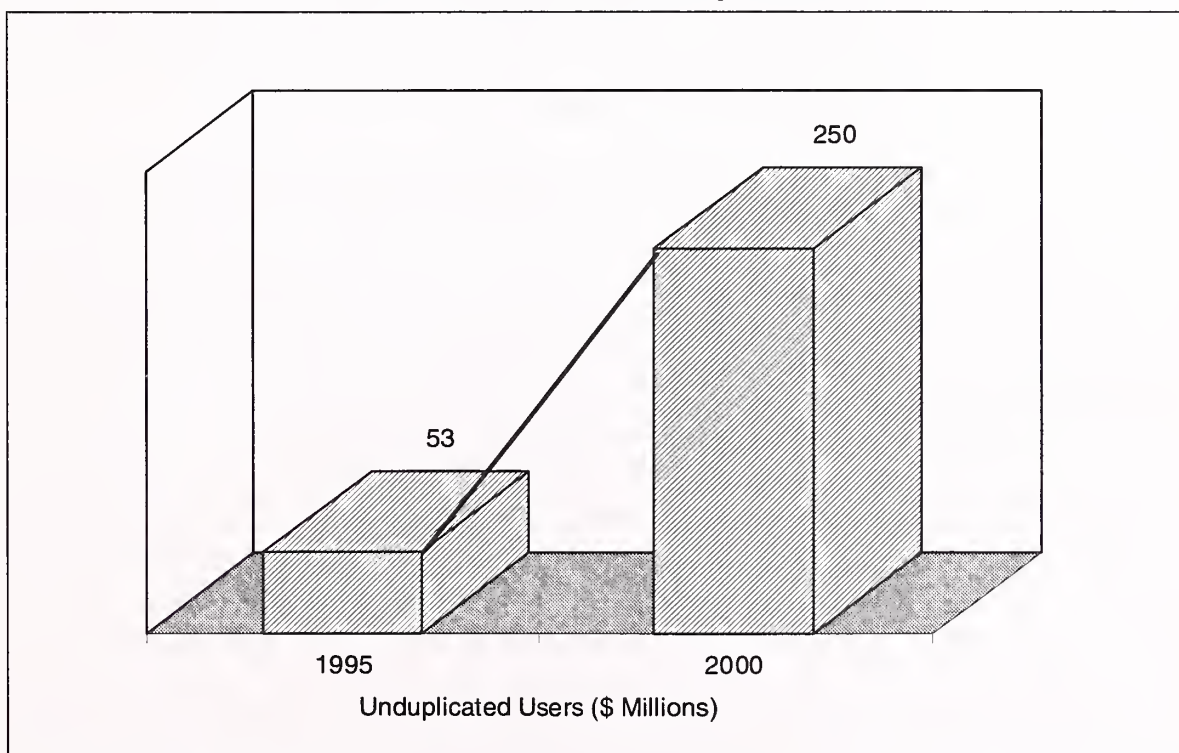
Source: INPUT

The establishment of the World Wide Web (WWW) has spurred Internet use through its HTML format, which can be scanned though the use of browser software. Mosaic and Netscape are the dominant browsers being used today.

The Internet has the potential to revolutionize how we communicate, how information is distributed, how purchases are made and services provided. The Internet/WWW has the potential to allow software users to obtain software data prior to sale, documentation, technical support and even a means of obtaining the software on line. Benefits include more timely resolution of problems, availability of up-to-date information when needed and savings in support and distribution. In addition to cost savings, there are opportunities for enhancing revenue by developing new products to be used on the Internet.

3. Changing Buyer

Changes have occurred over the past several years regarding who, within an organization, makes the ultimate buying decision for applications solutions. Historically, hardware/software vendors dealt primarily with IS organizations responsible for developing and maintaining centralized systems. Yet in the distributed environment of the client/server world today, where servers and their resident programs are distributed throughout the organization, who is the buyer for software products? INPUT's research and interviews with applications solutions vendors confirm that while IS maintains its policy-setting role and has overall responsibility for enterprise-wide systems, user departments have increasing latitude to choose the solution that best meets their requirements.

These changes have led to increased willingness to look outside the organization for applications solutions. As IS organizations become smaller, there are limited resources available to develop in-house solutions. In addition, as long-standing legacy systems need to be integrated into enterprise systems, packaged solutions will be more in demand.

4. Migration to Smaller Platforms

The ever-increasing processing power of PCs and workstations, along with the capabilities of operating systems such as Windows, have led to a trend to move data and the processing of it closer to the user and make it available to users in the format needed. This drive is resulting in the movement of applications off of the mainframe onto department systems and PCs. This approach supports the flexibility and ease of use required by the user, at a lower cost than on the mainframe. Does this trend point toward the demise of the mainframe? Opinions vary widely on this issue. Many leading-edge companies, such as Federal Express, have moved away from the mainframe world in favor of distributed processing. You could say the market success of

these companies is at least partially related to their approach to computing. However, there are a number of internally developed mainframe applications used by corporations today that continue to function and meet company needs. These businesses are not anxious to make investments to change something that is still effective. The transportation industry, for example, handles large numbers of transactions that are best handled in the mainframe world.

For many companies, the role of the mainframe is changing rather than going away. Some businesses that have been migrating to a client/server environment view the mainframe as a superserver for data. Others still rely on mainframe systems for specific applications that are an integrated part of the client/server environment. Migration to smaller platforms will continue as it makes sense, with mainframes continuing to serve a function for specific needs.

B
Vendor Issues

Significant vendor issues are listed in Exhibit IV-4 and are discussed below.

Exhibit IV-4

Vendor Issues

- Changing market
- Expanding marketing activities
- Impact of open systems
- Pricing

Source: INPUT

1. Changing Market

The technology changes discussed above have a direct impact on the market for applications solutions. The increased involvement of the user in purchasing decisions multiplies the size of the market significantly. Applications providers need to reach a larger number of decision makers in their marketing efforts. In addition, the buyer of today is looking for a solution rather than a product.

One challenge that applications solutions providers have had in selling client/server products relates to this new buyer. In the past, selling to IS organizations involved the sale of massive systems, with associated high prices. Many buyers of client/server products come out of user departments where they are more accustomed to the modest price tag of PC products. Convincing this buyer of a product's value involves demonstrating how it can

benefit the business and address specific business issues. Particularly in the vertical market, the provider needs to have a clear understanding of the buyer's business.

2. Expanding Marketing Activities

Application solutions vendors need to supplement their use of a direct sales force to address their marketing needs. The vendors that are enjoying successful growth today are using a variety of marketing arrangements to achieve name recognition and market penetration. Distribution through retailers, VARs and systems integrators supplements direct sales to better target product sales to potential user groups. INPUT's interviews with software vendors have shown a lag in developing these distribution channels. Exhibit IV-5 shows how the 54 software vendors interviewed by INPUT distribute their products.

Exhibit IV-5

Channels of Software Distribution
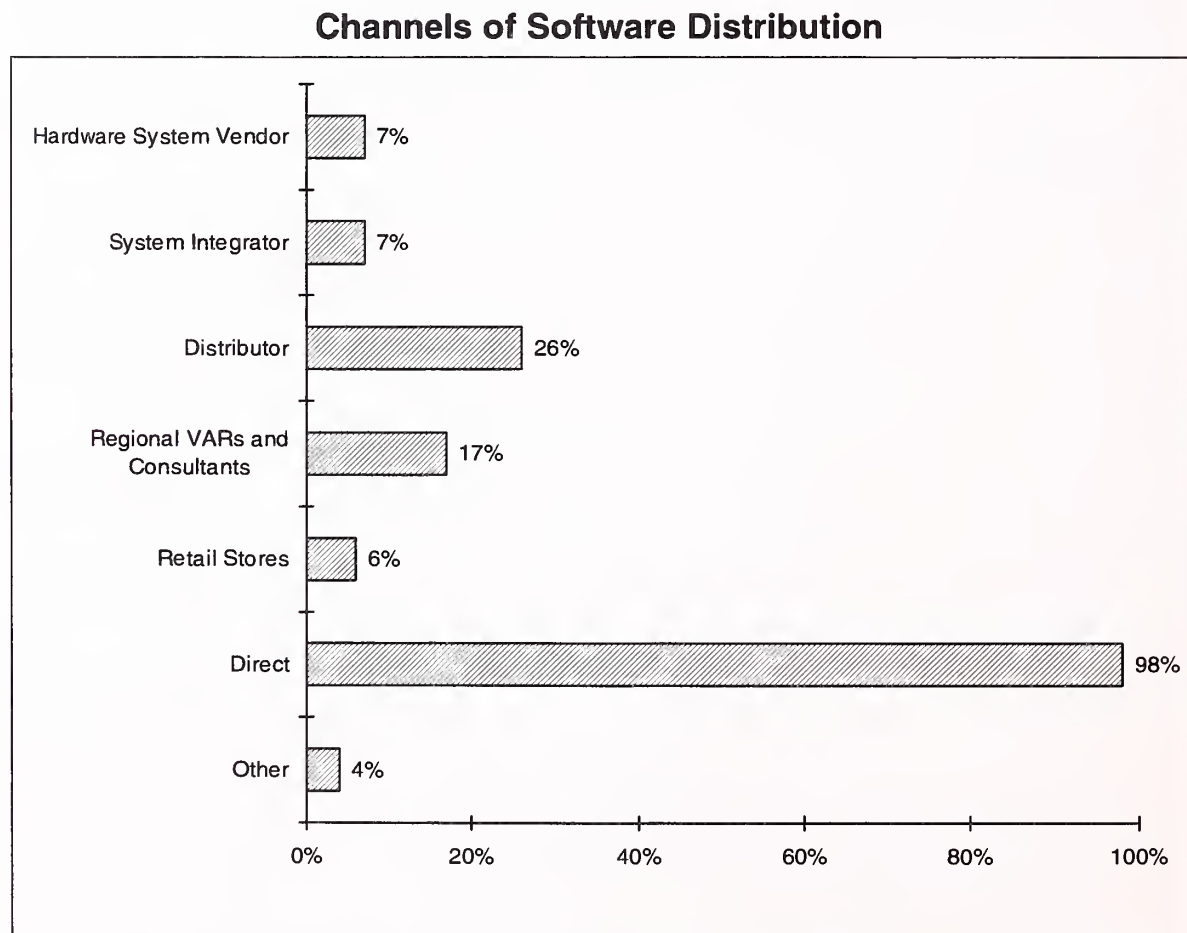
Direct: 40% of respondents distributed 100% or product directly to buyer.   *Source: INPUT*

Forty-six percent of the respondents sold *only* through direct channels, while an additional 28% had only a small percentage of sales through other channels. *PC Week*, in its article "Forecasting Driving Forces in the New Year" last December, stated: "Corporations want a single source to assemble

MMP5

and support custom business solutions from off-the-shelf products. VARs, integrators, consultants and other solutions sellers will continue to grow in importance."

Vendors who offer a variety of products have been successful leveraging their success in one area to boost sales of other products by offering several products in an attractively priced package. The availability of such suites has become very popular with products such as Microsoft Office and Lotus Smartsuite. Buyers purchase the suite primarily to obtain one product, viewing the other products as being "free." So, if a buyer is looking for a word processing package, he may end up purchasing a suite product and obtain other things like presentation graphics, affecting the competition offering such products that are not part of a suite.

Software vendors receive the bulk of their revenue from actual product sales, with service and support offering smaller margins. Yet the buyer of today is looking for a solution that may require a variety of skills. In order to address buyer concerns, particularly regarding purchases of vertical industry products, the applications solutions vendor needs to supplement software with services such as consulting, customization and systems integration. Many applications vendors recognize the importance of this service through in-house consulting groups to support the product. Another important trend is developing liaisons with partners to support customer needs. SAP AG, for example, has a lengthy list of consultants, systems integrators and VARs with whom it works to support the customer. This type of relationship supports greater market recognition.

3. Impact of Open Systems

With pressures on companies to reduce costs and operate more productively, many organizations have undertaken business process reengineering. Informations systems are used strategically to streamline business processes and increase productivity. Organizations are embracing open systems solutions that can be integrated across platforms to maximize the benefits of business process reengineering.

The continuing trend toward open systems is illustrated by Apple Computer's decision to open up its system after many years of keeping it proprietary. Apple led the charge toward user friendly systems before Windows became a reality. It was responsible for putting the tools of computing into the hands of the nontechnical user who didn't understand the complexities of DOS. However, many believe that Apple made a big mistake by keeping its technology proprietary for so long. Today it's struggling to compete with the market dominance of the Windows environment. IBM has also recognized the importance of open systems. In announcing its product strategy following the Lotus acquisition, IBM and Lotus emphasized commitment to an open environment, vowing to provide APIs to all major systems.

The technology trends discussed in this section (including the move toward client/server, smaller systems and the importance of the user) illustrate a need for solutions that are platform independent and tailored to user requirements. As companies move toward electronic transactions over the Internet, use of EDI will become more prevalent.

4. Pricing

Applications solutions pricing is going through some dramatic shifts. Heavy competition in certain markets has driven prices downward. The move to client/server computing calls for different pricing schemes than those that have been associated with centralized mainframe systems. Software vendors have been struggling with pricing alternatives, trying to achieve a balance between addressing user concerns and insuring that they don't "give away the store." Users are demanding options that have less to do with the hardware (where the software resides) and more with how it is used and the value obtained. Pricing schemes have moved from being hardware-related to user-related. In the user-based scenario, pricing is determined by the number of people making use of the software. Yet buyers believe that pricing schemes should take into account the fact that some users make heavier use of the software than others. Concurrent user pricing tries to address this by basing prices on a combination of standard and casual users. Yet even this does not take into account variances in usage and software value.

Some buyers favor pricing based on the actual amount that the software is used. This approach requires a way to measure software usage and bill accordingly. Metering products to address this are not generally available at this time.

Site licenses have become popular with buyers, allowing all employees at a particular site to have access. Vendors need to be diligent about putting some limitations on what such a license includes, to avoid abuse. As enterprise computing becomes the norm, it will be more and more difficult to relate pricing to size of hardware, individual user or location. Integrated systems will provide applications to users regardless of the device on which the application resides, workstation used or location of the user. Pricing will continue to be a challenge to software vendors and requires careful analysis and negotiation with customers.

C

Impact of Issues and Trends

1. Client/Server as Market Stimulant

The definite trend toward client/server technology will continue to provide opportunities to applications solutions vendors. Buyers are embracing this

approach and are seeking out software that supports this architecture. The recognized benefit of databases to make data available is spurring companies in a number of market sectors with long-standing legacy systems to seek out new solutions. Many of the applications vendors that committed early to client/server solutions have been wildly successful, and, in some instances are operating without competition. Success in technology is not the result of a "wait and see" approach. Software providers that are aggressive about providing solutions before the competition will gain a competitive edge and early market recognition and dominance.

Exhibit IV-6 indicates what the software vendors responding to INPUT's survey indicated as key requirements driving demand for their products.

Exhibit IV-6

Requirements Driving Purchase of Packaged Applications

- Improved productivity/reduced cost
- Integration of company systems
- Ease of use
- Flexibility
- Address specialized industry need
- Compliance with government requirements

Source: INPUT

The most frequently mentioned requirement referred to improvements in productivity and reduced costs most commonly associated with reengineering of business processes within client companies. Integration of systems within the company for improved decision support was also an important consideration to clients of these applications solutions providers.

2. Strategic Alliances

The complexities of marketing technology products and services today call for alliances among providers of complementary services. Buyers are looking for integrated solutions on an enterprise basis that address a variety of specific requirements. Leveraging investments in existing systems while making data available to users as new solutions are developed can be challenging. Providing solutions to operate in a open environment is increasingly important. Applications solutions vendors only provide one part of the solution. Although traditionally, large IS organizations have provided the project coordination among multiple vendors, internal staffing is less and less available to serve in that role. Providers that have developed alliances with consultants, VARs, hardware suppliers and systems integrators have positioned themselves strongly in the marketplace. These alliances allow the vendor to offer a complete solution to the buyer. In addition, alliances can

provide the vertical market expertise so necessary to compete in the market to provide products to address unique industry needs. As discussed earlier, given the orientation of today's buyer to seek solutions, this scenario offers a strong advantage.

Many successful applications solutions providers have been aggressive in developing appropriate alliances and leveraging them to address user needs. SAP, for example, prides itself on its extensive list of alliances. These include experts in business process reengineering, systems integration, project management and user training. It has also developed Industry Centers of Expertise to supplement alliances internally. Microsoft and Oracle are making use of alliances to meet user demand. Microsoft's alliances with 50 leading computer hardware manufacturers have allowed it to offer products bundled with hardware purchases.

Specific purposes for strategic alliances developed by applications solutions vendors include:

- Technology development

- Bundling modular functions

- Co-marketing

- Consulting support

- Technology alliances with application tool vendors

- Delivery of enterprise-wide computing solutions

- Alternative channels of distribution

To address the vertical markets, vendors need to draw on the expertise of strategic partners with in-depth knowledge of particular markets to provide customizable solutions. Developing customizable solutions where only a small percentage of the solution needs to be truly customized will minimize support difficulties.

More than half of the applications solutions vendors interviewed have at least some kind of alliance to address customer needs. As seen in Exhibit IV-7, most of these alliances are with other software vendors, hardware vendors and, to a lesser extent, consultants. The market success of applications solutions providers that have aggressively pursued alliances points toward a continued trend in this direction.

Exhibit IV-7

Applications Solutions Vendors' Strategic Alliances

No Response or No
Alliances
44%

Have Alliances
56%

With Hardware
Providers
26%

With Other Software
Companies
46%

With Consultants
13%

No Specifics Provided
15%
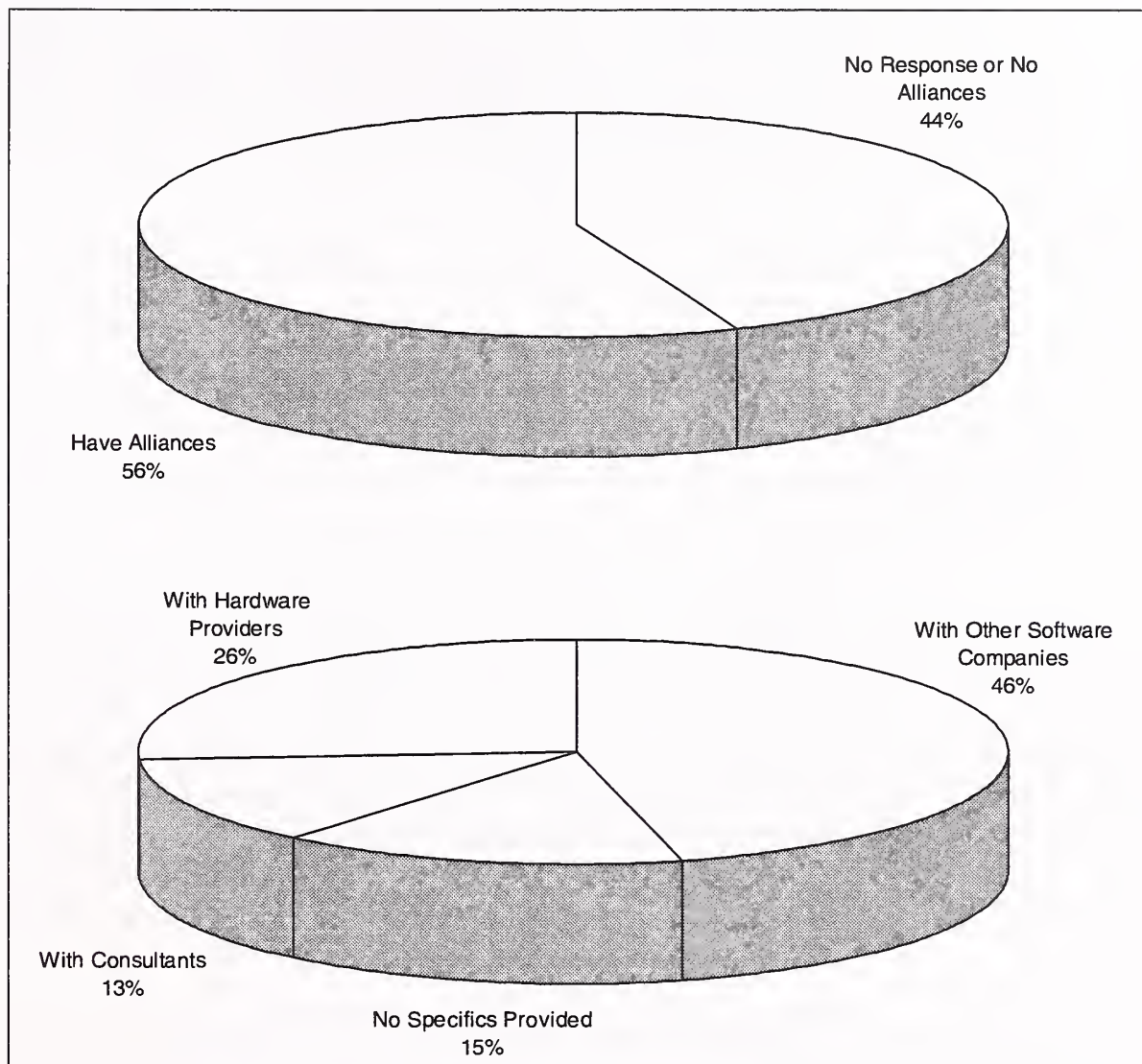
Source: INPUT

D

The Growing Importance of the Internet

The Internet has experienced explosive growth in the past two years. It's almost impossible to pick up a newspaper or magazine these days without seeing an article about the Internet. Yet use of the Internet today is just the tip of the iceberg. Companies are still researching its potential and have been slow to actually conduct transactions over the net. Its usage has been primarily for communication and information distribution.

In the second quarter of this year, INPUT completed a research study of 202 North American companies from a number of industries regarding marketing applications using the Internet. The functions being used by these companies on the Internet are noted in Exhibit IV-8.

Exhibit IV-8

Internet Functions Being Utilized

Internet Function	Frequency of Use by Active Internet Companies (%)	Frequency of Use by Emerging Internet Companies (%)
Electronic Mail	79	74
News Groups	38	80
File Transfer Protocol	48	85
Database	34	89
Web Page	79	70
Other	8	96

Source: INPUT

Security issues have been a concern limiting both business transactions over the World Wide Web and the growth of electronic malls, where buyers can purchase products over the Internet. Indeed, security concerns have been justified, with the recent infiltration of America Online by computer hackers. Yet these concerns are being addressed through the availability of firewalls and the security offered through Netscape as part of its web browsing software. The availability of browsers such as Netscape and Mosaic are also making it easier to use the Internet. As bandwidth increases and security issues are addressed, increased usage of the Internet for conducting transactions, selling and distributing products will become a reality.

The development of the World Wide Web has been a boon to Internet usage. Estimates are that more than 10,000 companies maintain 'home pages' that provide information in a multimedia format about companies and their products.

Information distribution is the most popular use of the Internet today. Many companies provide information about their business and products through the home page. Data provided includes technical and product information. There are also a number of opportunities for applications solutions companies to make use of the Internet. Three types of uses are discussed below.

1. The Internet as a Distribution Channel

The ever-increasing number of users hooked up to the Internet make it an ideal medium for information distribution. This includes providing product and technical information, specifications, pricing and product availability to potential customers. For example, Novell has published its product and technical information on the Internet's World Wide Web. Electronic

marketing has the potential to get product information to customers as they need it, in the form they need, at costs substantially lower than conventional advertising and marketing communications. In fact, those who do not distribute product information on the Internet may ultimately lose out on sales opportunities as buyers increasingly seek out product information on the Web. This approach to product distribution will ultimately change the way that products are marketed. Rather than the seller approaching the buyer, on the Internet the buyer searches out information in specific areas of interest. The Internet will bring qualified buyers to the seller. Sellers need to make sure that they're on the Internet to maintain competitive positioning.

As transaction security, reliability and business process integration issues are resolved, the primary focus of electronic marketing on the Internet will shift from distribution of information to the actual purchase of goods and services. Electronic marketing promises a future of on-line, twenty-four hours/day, seven days/week product ordering and fulfillment, with substantially lower labor and overhead costs compared to today's telemarketing operations. MCI's marketplaceMCI service, which went on-line in March 1995, is an early example of transaction-oriented "Internet malls," defined as a collection of electronic storefronts hosted on a single Internet-connected server. Catalink Direct, a computer reseller, provides product information and accepts customer orders through PECOS (Personal Electronic Catalog and Ordering System), which is offered as both a hybrid CD-ROM/on-line service and an Internet mall. Both CompuServe and America Online have offered electronic on-line shopping areas for several years.

Over the years, direct marketers and other mass mailers have become accustomed to a series of significant postal rate hikes that have raised the cost of direct mail campaigns, catalog distribution and inquiry fulfillment. More recently, paper costs have risen even faster than postage. In response, marketers have implemented database marketing and other sophisticated techniques to more tightly pinpoint potential customers and thus increase the efficiency of their sales efforts. While mailing, printing and handling costs have continued to rise, increasing competition between long-distance telecommunications companies, the start of competition in the local telephone service arena and the widespread introduction of technologies such as ISDN and ATM have caused dramatic reductions in the cost of electronic communications. Substituting the Internet for expensive and proprietary value-added networks (VANs) will decrease the cost of electronic transactions while increasing their reach. As these trends develop, the cost of electronic commerce will eventually fall far below that of paper-based marketing for most business-to-business marketers. And for those vendors who still must rely on paper, database marketing and other computer-based techniques will dramatically increase marketing efficiency and lower costs.

The scalability of client/server systems will enable even small companies to offer their goods and services over the Internet. While it's not uncommon for a major marketer to spend from $100,000 to $1 million to establish an on-line presence or publish a CD-ROM catalog, a small business can establish a presence on the World Wide Web to provide product information and customer support with an initial investment of only a few thousand dollars and monthly fees of as little as $90. Companies that want to accept orders on-line can create an on-line presence for less than $10,000 and monthly fees of less than $1,000. And software and services such as MediaShare's ProductBase enable marketers to create CD-ROM catalogs for approximately the same cost as paper catalogs with similar content.

INPUT conducted an extensive research study regarding the use and potential growth of electronic catalogs, storefronts and Internet malls. Electronic catalogs are analogous to traditional paper catalogs but are produced on CD-ROM or disk and physically distributed to the purchasing company. On-line storefronts are offered as part of the services of proprietary on-line networks such as Prodigy, America Online and CompuServe. Internet malls are similar in concept, but use the Internet rather than proprietary on-line networks. A mall owner will set up a World Wide Web site and allow electronic "tenants" to have their own area (storefront) within it to present their products and conduct transactions. As seen in Exhibit IV-9, computer hardware and software were the most sought-after products by respondents to a survey conducted as part of the study.

Exhibit IV-9

**Goods and Services Looked for/Purchased
by Internet Marketplace Users**
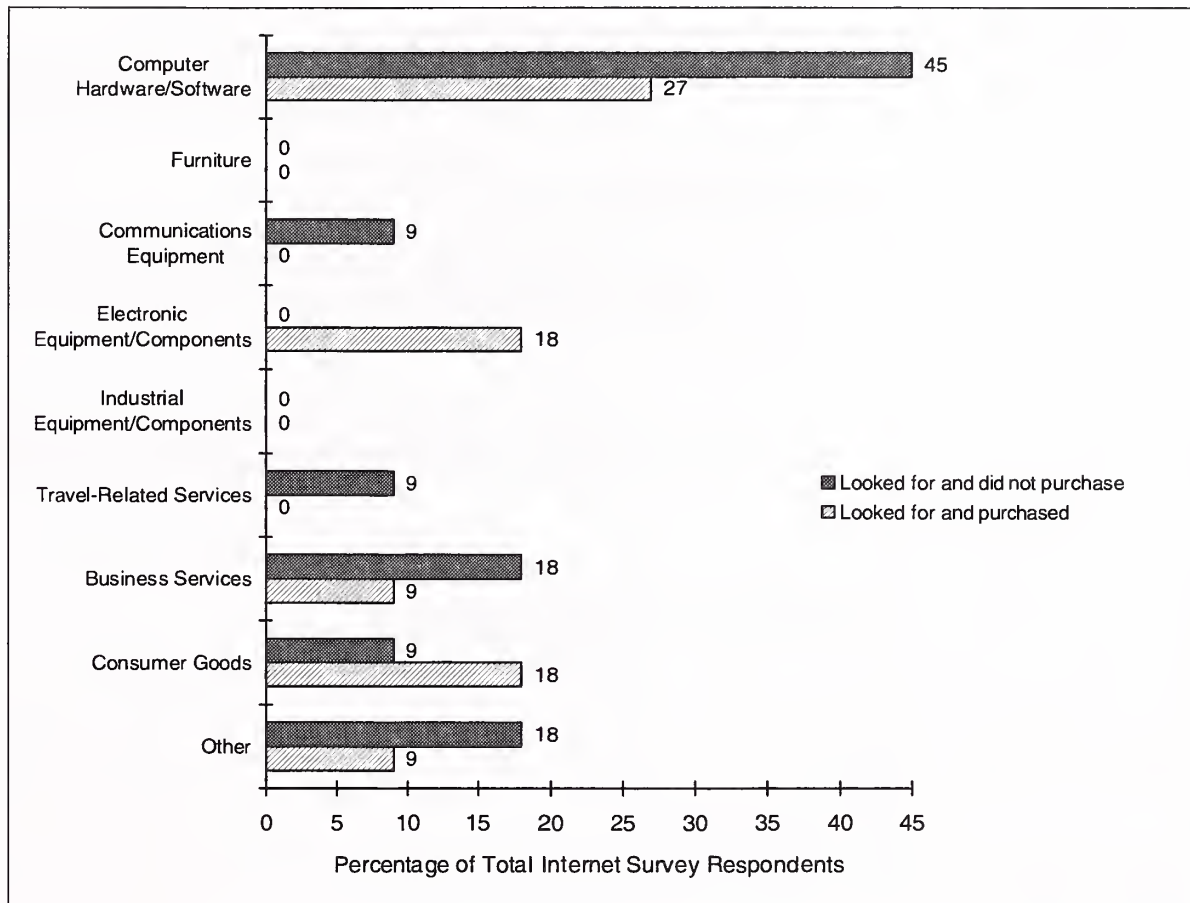
Source: INPUT

Software has already begun to be sold on-line and INPUT believes that this is a trend that will continue. In November of last year, CyberSource Corp announced a web server with information on software for a variety of environments (over 6,000 titles included); however, initially just a few of these were available to be downloaded. MCI recently announced plans for distribution of multimedia information over the Internet in conjunction with Rupert Murdoch News. INPUT's survey of applications solutions vendors revealed that 76% were making some use of the Internet today. The primary uses of the Internet by these companies at this time are listed in Exhibit IV-10.

Exhibit IV-10

Applications Solutions Vendors' Internet Uses Today

Total Surveyed - 54
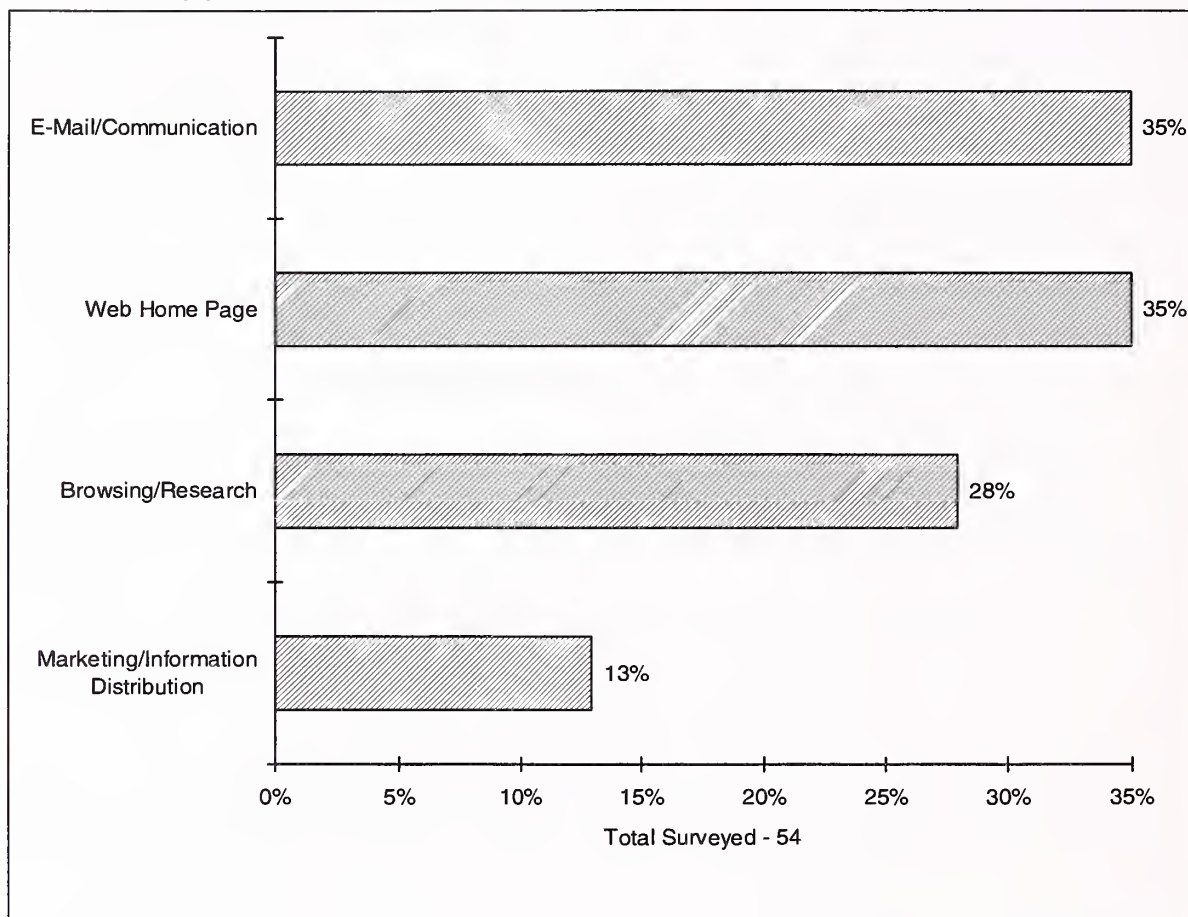
A few companies mentioned use of the Internet for providing technical support and recruitment.

The applications vendors interviewed by INPUT are generally moving cautiously regarding expanded use of the Internet. As seen in Exhibit IV-11, only a few reported that they have plans to distribute software and/or provide updates or process orders over the Internet. Many indicated that they had no additional plans for Internet usage or were unsure about future plans.

Exhibit IV-11

Applications Solutions Vendors' Future Internet Plans

Category	Value
Expanded Home Page/Marketing	19
Unsure - Working on Plans	12
No Response/Confidential	9
No Plans	8
Expanded Communication	3
Distribute Product/Take Orders	3

Total Surveyed - 54
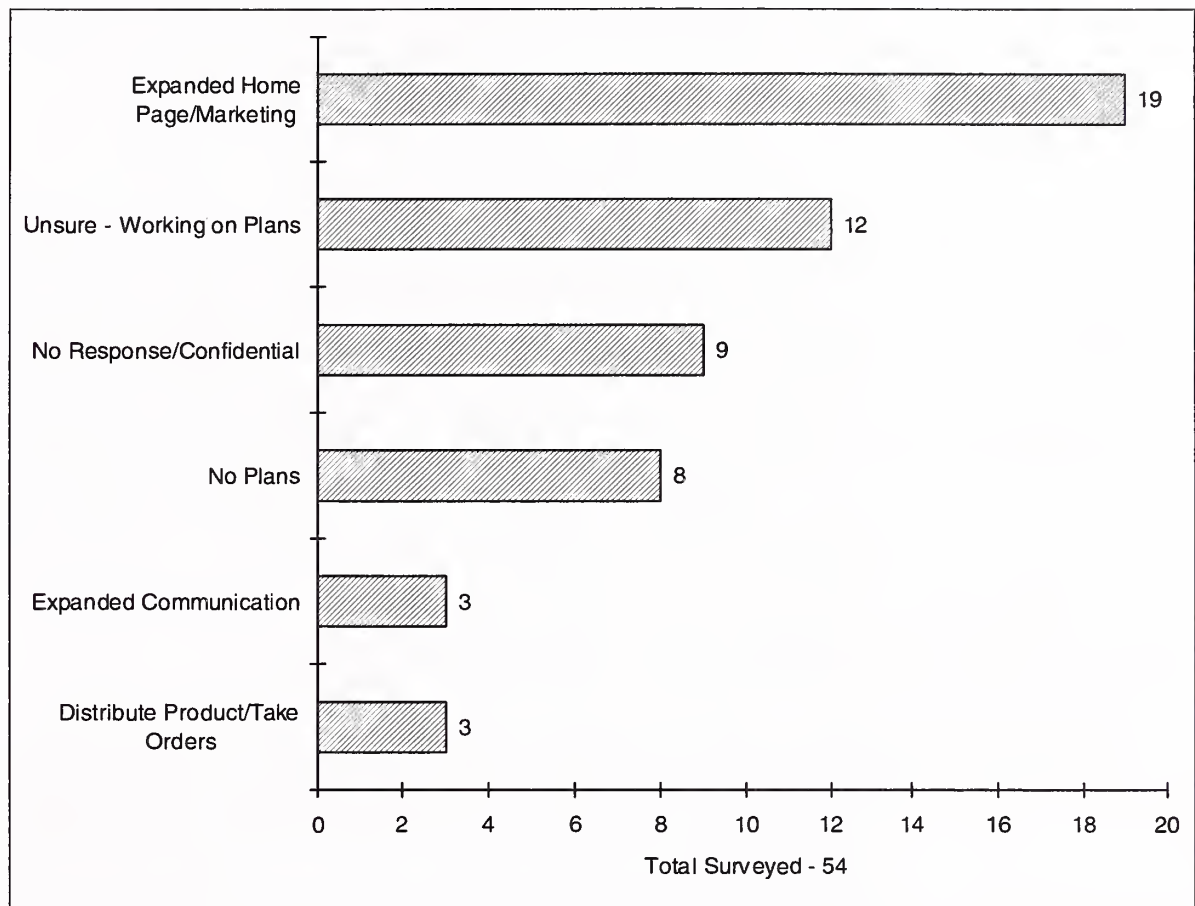
Source: INPUT

INPUT feels that as security becomes more reliable, applications solutions providers need to become aggressive in leveraging use of the Internet to their greatest advantage. Vendors need to plan now on how to adapt their products to sell on-line. Marketing opportunities exist to allow potential buyers to try out new software on the spot, by making it available on line. Distribution of product updates can be simplified and associated costs reduced through distribution over the Internet.

The Internet provides an optimal environment for applications solutions vendors to reduce costs and increase efficiency in the technical support area. Compaq believes that nearly half of its support issues can be addressed by providing relevant information on the World Wide Web. Its Web site, as an example, provides a section answering the most frequently asked questions for all of Compaq's portables and desktop systems.

2. The Internet as an Application Facilitator

The Internet today is in a very similar position to the PC when it was first introduced. There's lots of talk about it; everyone seems to agree it's a good

thing; early adopters love to play with it; but its ultimate role is open to conjecture. Yet, like the PC, the more available it becomes, the more ideas will be generated for its use. Therefore, the mere presence of the Internet is likely to facilitate opportunities for new applications to be sold that very likely would not exist without the Internet.

Forms capability on the Internet, for example, opens up application opportunities in a number of industries. In the insurance industry, for example, buyers may be able to place applications directly with the insurer handling the transaction, without agent involvement. Real estate listings made available on the Internet could allow buyers to review listings directly and target potential homes of interest. Banks such as Wells Fargo are already pursuing plans for on-line transactions. Businesses in all sectors will be taking advantage of sales and marketing opportunities over the Internet. As these uses are developed, software will be required to make them a reality, thereby creating new opportunities for applications solutions vendors to develop new products.

3. Software Targeted for Internet Use

Use of the Internet will require various application solutions. Examples include browser software such as Netscape and Mosaic. In addition, as companies with home pages want more data regarding the demographics of those viewing their home page, metering software will develop into a sizable market. Graphics to produce home pages and related software will also increase in demand along with Internet growth.

INPUT believes there is a tremendous market opportunity for applications solutions focused on:

- On-line and Internet storefront authoring tools
- Internet World Wide Web browsers and servers, especially servers customized for transaction processing applications
- Electronic catalog authoring tools
- Standalone and integrated back-end transaction processing systems for electronic catalogs

INPUT expects competition in all these areas to intensify throughout the rest of the decade, but applications developers can build an advantage for their products through ease of setup and ease of use: Today, it is somewhat complicated for users to conduct transactions over the Internet. Major advances are needed in order to make electronic transactions as simple as picking up the phone or faxing a purchase order to a vendor. Security features must be highly reliable and trusted, yet virtually invisible to both buyers and sellers.

Applications solutions vendors that come up with simple, effective ways to integrate Internet applications with existing business systems will have an advantage in selling to those companies planning to actually market products over the Internet. Interfaces to desktop and SQL databases and popular accounting software are essential. Support for popular application development tools will enable organizations to use the tools they know to create Internet applications.

Today, few electronic catalogs—and even fewer on-line marketplaces or Internet malls—come close to the presentation quality and ease of use of printed catalogs or other documents. New presentation techniques, coupled with platform-independent software such as Adobe's Acrobat or Novell/WordPerfect's Envoy, will make electronic catalog and Web page design far more flexible, thus increasing the usability of Internet systems by bringing them closer to the familiar printed page.

However, business practices differ dramatically from market to market. For example, the needs of banks, stock brokerage firms and other financial marketers are considerably different from those of plastics processers, yet for the most part, organizations in both categories must use the same catalog authoring, Web server and security software. The popularity of applications solutions that are carefully tailored for the needs of specific markets will grow as merchants make greater use of the Internet.

(BLANK)

V

Market Forecast

A
Market Overview

1. Actual 1994 Applications Solutions Market Growth Rates

Exhibit V-1 compares the 1994 forecast figures with the actual market figures for 1994 and also shows the growth rates forecast in both 1994 and 1995. As the exhibit below demonstrates, 1994 actual figures were consistent with the forecast and variances in the five-year CAGR were minor, at 1% or less.

Exhibit V-1

U.S. Applications Solutions Market—1994 Actual versus Forecast

1994 Actual and Forecast	1994 Forecast ($ Billions)	1994 Actual ($ Billions)
• Applications Software	27.7	28.0
- Mainframe	5.9	5.9
- Minicomputer	6.9	6.9
- Workstation/PC	14.8	15.2
• Turnkey Systems	14.8	14.8
- Equipment	6.2	6.2
- Software	5.7	5.7
- Professional Services	2.9	2.9

1994 and 1995 Forecast	1994-1999 CAGR (Percent)	1995-2000 CAGR (Percent)
• Applications Software	15.0	16.0
- Mainframe	7.0	7.0
- Minicomputer	9.0	8.0
- Workstation/PC	20.0	21.0
• Turnkey Systems	8.0	9.0
- Equipment	5.0	6.0
- Software	9.0	10.0
- Professional Services	13.0	13.0

Source: INPUT

a. Total Applications Solutions Market

The total applications solutions (applications software products/turnkey systems) market in 1994 was $42.8 billion, which reflected a 13% growth rate between 1993 and 1994. The forecasted growth rate was 12%. Continued expansion in the workstation/PC applications software products market spurred steady growth.

b. Applications Software Products Market

INPUT's forecasted expenditures for applications software products as a whole for 1994 were $27.7 billion, representing a growth rate of 14% from 1993. The actual market size was $28.0 billion, reflecting a 15% growth rate. The workstation/PC market, which was the principal submode that accounted for the higher-than-projected overall market growth rate, grew at 22%, compared to INPUT's forecasted 20% growth rate.

Though the U.S. market for some applications software products has become saturated, overall this sector is expected to continue to enjoy healthy growth in the next five years. INPUT's CAGR of 15% for the 1994-1999 period increases to 16% for the 1995-2000 time period, reflecting new opportunities for applications software.

Exhibit V-2 compares the 1994 forecast for applications software with the actual 1994 expenditures by industry-specific and cross-industry market. In all sectors, actual expenditures slightly exceeded or met earlier projections.

Exhibit V-2

1994 Actual versus Forecast U.S. Applications Software

Sectors	1994 Forecast ($ Millions)	1994 Actual ($ Millions)
Vertical Sectors		
Discrete Manufacturing	3,237	3,270
Process Manufacturing	942	969
Transportation	544	552
Utilities	296	298
Telecommunications	584	595
Retail Distribution	387	389
Wholesale Distribution	741	748
Banking/Finance	2,612	2,615
Insurance	1,112	1,117
Health Services	1,385	1,385
Education	927	940
Business Services	1,401	1,416
Federal Government	727	816
State/Local Government	252	255

Exhibit V-2 (continued)

1994 Actual versus Forecast U.S. Applications Software

Sectors	1994 Forecast ($ Millions)	1994 Actual ($ Millions)
Cross-Industry Sectors		
Education/Training	266	274
Office Systems	3,610	3,649
Planning/Analysis	2,790	2,840
Sales/Marketing	416	410
Accounting	3,307	3,324
Engineering and Scientific	917	930
Human Resources	895	896

Source: INPUT

c. Turnkey Systems Market

INPUT forecasted 1994 turnkey systems market expenditures of $14.8 billion in its 1994 market survey, reflecting an annual growth rate of 9%. Actual total 1994 expenditures were as anticipated. A negative variance of 1% in the equipment submode was offset by a positive variance by the same percentage in the professional services submode.

Slight positive variances, particularly in the professional services area in 1999, contribute to a slightly higher CAGR of 9%—1% over the 8% projected last year. This indicates that though growth in turnkey systems is relatively modest, it will still have a place in the technology model of the future. Industry-specific and cross-industry variances in 1994 forecast/actual are noted in Exhibit V-3.

Exhibit V-3

1994 Actual versus Forecast U.S. Turnkey Systems Market

Sectors	1994 Forecast ($ Millions)	1994 Actual ($ Millions)
Vertical Sectors		
Discrete Manufacturing	3,655	3,689
Process Manufacturing	768	779
Transportation	337	335
Utilities	126	122
Telecommunications	663	676
Retail Distribution	852	860
Wholesale Distribution	583	585
Banking/Finance	1,234	1,240
Insurance	342	337
Health Services	1,150	1,154
Education	277	276

Exhibit V-3 (continued)

1994 Actual versus Forecast U.S. Turnkey Systems Market

Sectors	1994 Forecast ($ Millions)	1994 Actual ($ Millions)
Vertical Sectors (continued)		
Business Services	1,056	1,069
Federal Government	1,507	1,444
State/Local Government	234	235
Cross-Industry Sectors		
Education/Training	162	165
Office Systems	122	123
Sales/Marketing	346	350
Accounting	501	499
Engineering and Scientific	145	147
Human Resources	98	100

Source: INPUT

d. Applications Solutions Markets, 1994: Actual versus Forecast, by Industry-Specific and Cross-Industry Markets

For most industry-specific and cross-industry markets, expenditures for both applications software and turnkey systems were in line with expectations, as summarized in Exhibits V-2 and V-3.

i.   Applications Software Products Market, 1994: Actual versus Forecast

The primary variant in the applications software products market was in the federal government sector (+12% variance 1994). This reflects higher than predicted growth in this segment. Yet the projected CAGR of 8% is still far below the 15% CAGR in 1990. As a result of budget constraints and heavy pressure from the Office of Management and Budget (OMB), many agencies are beginning to view their software requirements in other than "unique solution" terms. When they have a fairly standard application, particularly an administrative application, they acquire standard commercial packages more often than before. This leads vendors to increase development of packages that are suitable for government use and government-oriented marketing efforts. Commercial software products can be purchased at volume discounts as part of "application suites" or purchased centrally with rights to copy.

In 1999, variances from the 1994 market forecast generally increase, as seen in Exhibit V-4.

Exhibit V-4

U.S. Applications Solutions Market, 1999

Sectors	1994 Market Forecast ($ Millions)	1999 Market Forecast ($ Millions)
Federal Government	882	1,186
Retail Sales	710	805
Education	1,595	1,728
Telecommunications	1,505	1,611
Sales/Marketing	627	677
Office Systems	7,247	7,689
Health Services	2,887	2,678
Utilities	556	544
Insurance	2,295	2,251

Source: INPUT

Federal government expenditures are projected to be 34% greater than what was previously forecast, reflecting the higher five-year growth rate. Retail sales projections increased by 13% due to radical changes occurring in retail IT systems usage. Retailers are aggressively moving toward client/server applications and purchasing related software. Education and telecommunications forecasted expenditures increased by 8% and 7%, respectively. The academic educational market for applications software products is the largest market segment in the education industry and includes courseware, administrative and library software. Greater than expected expenditures are partly a result of the strong interest in multimedia in the schools.

Sales and marketing and office systems expenditures also were adjusted upward for 1999 by 8% and 6%, respectively. Once again, the trend toward distributed processing is driving companies to automate many sales and marketing functions and increase linkages between remote sales forces and multiple databases, thus driving increased expenditures for applications software. Continuing changes in development of operating systems leading to de facto standards will continue to spur growth in office systems expenditures.

The only negative variances were relatively slight, in health services (7%), utilities (2%) and insurance (2%). Health services growth has been delayed by continued confusion regarding the ultimate model for future health care in the U.S. The move toward managed care brings with it many questions, and spiraling health care costs are driving cost reductions and continued consolidations in the industry. While applications software expenditures in the health care industry are still expected to grow at a strong rate (15% CAGR), the state of flux in the industry has led INPUT to adjust

projections down slightly. Utilities and insurance industry expenditures on applications software are expected to continue at strong growth rates, with CAGRs of 13% and 16%, respectively. However, slight modifications of 1999 spending levels have been made due to the strong tradition of in-house development in these industries. Exhibit V-5 notes the variances between the 1994-1999 and 1995-2000 CAGRs for applications software. Most significant are the expected strong increase in federal spending in this area, and the rejuvenation (driven by a strong economy) of the retail market. Discrete manufacturing, education and sales/marketing are all expected to grow by another two percentage points over the next five years.

Exhibit V-5

Applications Software CAGR—1994 Report versus 1995 Report

Sectors	Projected CAGR 1994-1999 (Percent)	Projected CAGR 1995-2000 (Percent)
Vertical Sectors		
Discrete Manufacturing	23	25
Process Manufacturing	18	18
Transportation	14	15
Utilities	13	13
Telecommunications	21	22
Retail Distribution	13	16
Wholesale Distribution	15	16
Banking/Finance	9	8
Insurance	16	16
Health Services	16	15
Education	11	13
Business Services	18	19
Federal Government	4	8
State/Local Government	13	13
Cross-Industry Sectors		
Education/Training	15	16
Office Systems	15	16
Planning/Analysis	15	14
Sales/Marketing	9	11
Accounting	14	15
Engineering and Scientific	13	13
Human Resources	10	10

Source: INPUT

ii. Turnkey Systems Market, 1994: Actual versus Forecast

In looking at 1994 actual expenditures for turnkey systems as compared with projections in 1994, surprisingly few variances occur, as shown in Exhibit V-3.

MMP5

Slightly reduced expenditures by the federal government (-4%) point toward a trend in this market away from turnkey products when applications software exists to address the same application. Interestingly enough, in 1999, the main variances, while minimal, are in the positive direction. In 1999, expenditures have been adjusted upward for 12 vertical industries and three cross-industry sectors. Negative variances are in utilities and, insurance and to a lesser degree, in accounting.

2. Applications Solutions Markets, Five-Year Forecasts

a. Applications Software Products and Turnkey Systems Five-Year Forecasts

INPUT's forecasted five-year growth rate in 1995 for the overall applications solutions market is 14%. Exhibit V-6 shows the five-year forecasts for applications software and turnkey systems.

Exhibit V-6

Applications Software Products and Turnkey Systems
U.S. Markets, 1995-2000
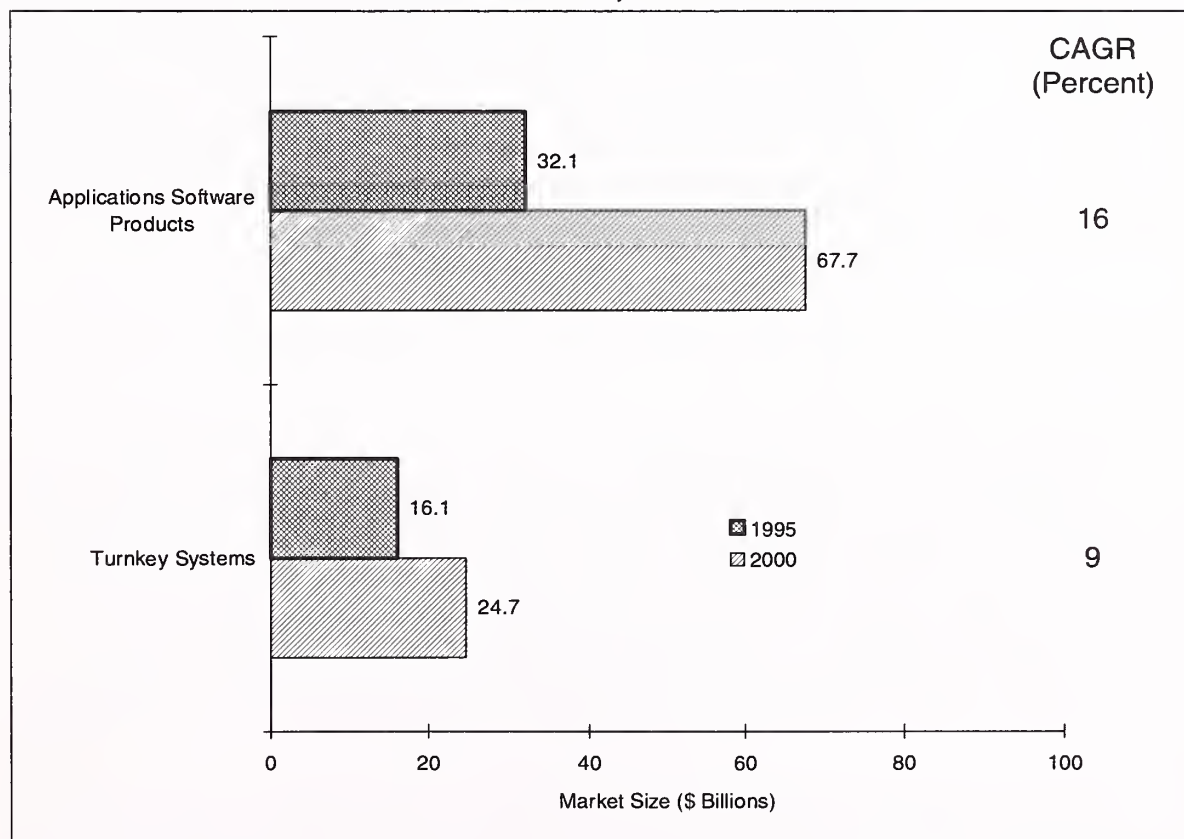
Source: INPUT

The turnkey systems five-year forecast increases slightly to 9% from 8%; the five-year outlook for the applications software products market has a 16% projected five-year CAGR.

INPUT's projections continue to support the belief that the shift to client/server, enterprise-wide computing will have a positive impact on applications software product vendors. In addition, the Internet offers opportunities for new product offerings by application solutions vendors. Much of the increase is expected to come from large corporations' use of more third-party applications software solutions—a result of the increasing complexity of the client/server application development process.

b. Applications Solutions Market Forecast by Industry-Specific and Cross-Industry Computer Platform Submodes

The following comments on the outlook for each of the applications solutions market subdivisions are based on user and vendor research conducted on an ongoing basis by INPUT's consultants in these industry and cross-industry market sectors.

i. Applications Software Products—Industry-Specific and Cross-Industry Market Forecasts

Industry-specific software represented 56% of the applications software market in 1994. This is expected to grow slightly throughout the next five years. Growth rates are projected to be slightly higher for industry-specific markets, at a 17% CAGR, than for the cross-industry markets, which are forecast at a 15% CAGR. Market size by industry and cross-industry sector, for 1995-2000, is summarized in Exhibit V-7.

Exhibit V-7

Overview—Applications Software Products
U.S. Information Services Market by Industry Sector, 1995-2000

Industry Sector	1995	2000	CAGR (Percent)
Industry-Specific Total	18,000	39,700	17
Cross-Industry Total	14,100	27,950	15
Discrete Manufacturing	3,950	12,000	25
Banking/Finance	2,850	4,250	8
Business Services	1,700	4,100	19
Health Services	1,550	3,100	15
Insurance	1,250	2,650	16
Process Manufacturing	1,150	2,650	18
Education	1,050	1,950	13
Wholesale Distribution	850	1,800	16
Telecommunications	720	2,000	22
Transportation	640	1,250	15
Federal Government	880	1,250	8
Retail Distribution	440	940	16
Utilities	340	620	13
Miscellaneous Industries	340	600	12
State and Local Government	290	550	13

Market Size ($ Millions)

Source: INPUT

Cross-industry applications have the advantage of a wide-ranging customer base with requirements that more easily lend themselves to packaged solutions than some industry-specific areas. The larger market is offset, however, by a lower average price tag than in industry-specific areas. Vendors need to sell more to make more, requiring mass marketing techniques and a variety of distribution channels. In addition, some segments of this market have become more mature, resulting in slower growth.

Applications vendors need to be positioned to introduce products as new technologies and standards develop. Client/server products and support for new operating systems such as Windows 95 should be developed as soon as possible. The use of 4GL application development tools will reduce application development complexity by providing a more functional, less standardized product.

Industry-specific vendors should continue to develop client/server solutions along with an expansion in the number of platforms supported.

The major market opportunity for industry-specific vendors is the in-house development market. INPUT estimates that the majority of available software opportunities are in the in-house markets that in the past required customized solutions. However, with the increasing complexity of client/server architecture, and enterprise-wide solutions, outside vendors will have an opportunity to expand their market share into these previously limited markets, particularly if they possess a solid framework of application development tool capabilities. Also, partnering with systems software and computer systems vendors is recommended to reduce marketing and support costs. In a rapidly changing product development market, this allows the independent vendors to retain the necessary financial resources to remain competitive.

As corporations elect to consider and use packaged software more in the future, as an alternative to in-house development, the potential market for industry-specific packaged software is significant.

ii. Industry-Specific Applications Software Products Market Outlook

The largest and fastest-growing markets for industry-specific applications software products are listed in Exhibit V-8.

Exhibit V-8

Applications Software Products Market—Industry-Specific Software

Largest 1994	($ Millions)	Fastest Growing	CAGR (Percent)
Discrete Manufacturing	3,270	Discrete Manufacturing	25
Banking/Finance	2,615	Telecommunications	22
Business Services	1,416	Business Services	19
Health Services	1,385	Process Manufacturing	18
Insurance	1,117	Insurance/Wholesale/Retail	16

Source: INPUT

Discrete manufacturing is the largest industry-specific market for applications software and is expected to remain so over the next several years. It also has the largest growth rate of all industries.

This industry is aggressively moving toward client/server solutions and is seeking applications software to address needs. Mainframes still play a role in multiplant environments. Many applications planned for migration from mainframes will remain until total conversions are completed, causing continuing payment of software licensing fees and/or maintenance charges.

A 5% annual growth rate in mainframe applications software is projected over the next five years. Minicomputer applications will grow at 11% through 2000.

A strong compound annual growth of 36% is forecast for workstation/PC applications software over the next five years. At $1.4 billion in 1994, this will yield a market of $8.8 billion, the largest subsegment of any product/service category.

Driving workstation/PCs in the discrete manufacturing environment is not only their proven function in decision support for staff-level employees in departments such as accounting, but also what is becoming increasingly important in the CIM (computer-integrated manufacturing) process. Progress in concurrent engineering solutions and RDBMS applications allow more OLTP (on-line transaction processing) solutions on the factory floor.

Applications software will be the fastest growing product and service category for discrete manufacturing, with a CAGR of 25% through the year 2000.

The banking and finance industry historically has made substantial use of packaged software products, particularly among the high proportion of small and midsized institutions. The largest firms, however, have developed the bulk of their own software systems. Many standard packages are offered, although these often require modification to meet a particular bank's needs. Application software customization has occurred primarily through third-party consultants, with larger institutions using their in-house information systems staff.

Most new applications software packages will be implemented on client/server systems. Pricing for such applications is lower than mainframe prices upon which banking applications have typically resided. Given the complexities of developing client/server systems and integrating new applications with existing legacy systems, an increasing portion of applications software packages will be delivered as part of a systems integration contract that links these new applications into a bankwide processing network. Growth in applications software is expected to decrease from 10% in 1995 to a CAGR of 8% from 1995-2000. A steady growth of 12% is expected in the workstation/PC software expenditures.

Business services, the third largest buyer of applications software today, is projected to remain one of the fastest growing industry-specific markets over the next five years, with a projected CAGR of 19%.

More than 70% of applications software products expenditures in this sector are for PC- and workstation-based solutions. Minicomputer software expenditures will grow at a consistently modest rate (8%) over the next five

years while growth for mainframe software will be minimal (1%). By 2000, the market for workstation/PC-based products should be 87% of the total market for applications software in this sector. Overall growth promoters for the business services sector are a national trend toward a service economy and the fact that its businesses, including real estate, law and accounting tend to be information-intensive.

The telecommunications applications software products market, with a projected 22% five-year CAGR, is the second-fastest growing industry-specific applications software products market sector. From an expenditure base of $595 million in 1994, this market is projected to reach $2.0 billion by 2000.

The demand for applications software products for the telecommunications sector is driven by the need for minicomputer and workstation/PC software and growing demand for mainframe software in at least two critical areas—imaging and mainframe-based artificial intelligence systems. These will be sources of significant growth over the next several years as carriers acquire increasingly sophisticated billing and customer support systems.

Workstation/PC software is needed to support logistics and maintenance activities. Engineers must access central systems to obtain cable and circuit diagrams. Customer service and maintenance representatives also need to obtain information about the status of a customer's services. In particular, workstation/PCs are used more often to reduce the volumes of paper previously associated with service and work orders.

The compound annual growth rate for 1995-2000 for the insurance industry is projected to be 16%. Within the insurance information services market, only outsourcing (17% CAGR) and system integration (18% CAGR) are expected to show higher growth rates than applications software products.

Many insurance companies have long-standing legacy systems developed to meet the business requirements of earlier decades. However, business operations and technology directions have changed, and insurers now find themselves needing to upgrade and replace these systems to meet today's requirements. Though there is a well-documented tendency in the insurance industry for IS organizations to develop their own software, these companies are increasingly looking at packaged solutions to meet their needs.

The need for software is also fueled by the increasing need to make timely data more available to agents and employees who are using PCs and are purchasing laptops requiring PC-based software to analyze information provided by company databases.

Insurance agencies rarely develop their own software, as they are typically small to midsized businesses that cannot support an internal technical staff. As agents make more use of technology, they will seek outside vendors for the applications software they need.

iii. Cross-Industry Applications Software Products Market Outlook

The largest cross-industry software products markets are office systems and accounting, as shown in Exhibit V-9, with the fastest growth expected from the education and training and office systems market sectors. The cross-industry applications software products markets expected to show the fastest growth are indicative of the trend to client/server-based solutions.

Exhibit V-9

Applications Software Products Market—Cross-Industry Software

Largest 1994	($ Millions)	Fastest Growing	CAGR (Percent)
		Education and Training	16
Office Systems	3,650	Office Systems	16
Accounting	3,300	Accounting	15
Planning/Analysis	2,850	Planning/Analysis	14

Source: INPUT

Most expenditure growth for office systems software will come from workstation/PC product sales. The market for office systems applications software products is expected to expand from $4.2 billion projected for 1995 to $8.9 billion in 2000.

In the office products market, mainframe expenditures are expected to decrease by a CAGR of 4% while minicomputer spending grows at the modest rate of 5%.

For accounting cross-industry applications, there is a comparatively more even distribution among current expenditures by platform size. In 1994, mainframe applications software products expenditures were $1 billion, minicomputer applications expenditures were $739 million and $1.6 billion was spent on workstation/PC applications software products.

However, future expenditures are expected to be heavily weighted toward workstation/PC-based purchases, with an estimated growth rate of 21% in this platform submode as compared with 8% for both mainframe and minicomputer platforms.

Minicomputer-based accounting applications software products will eventually decline; however, midsized businesses and divisions of large corporations continue to purchase minicomputer-based accounting packages. Users have made considerable investments in midrange hardware in recent years, and these platforms are positioned to perform within client/server configurations. Also, many vendors are developing UNIX-based products and targeting them at midrange systems users, which is sustaining midrange usability.

Exhibit V-10 points out the wide variance in growth expectations by platform size for the applications software products markets over the next five years, with the workstation/PC market continuing to grow at a strong 21% CAGR.

Exhibit V-10

U.S. Applications Software Products Market by Platform, 1995-2000
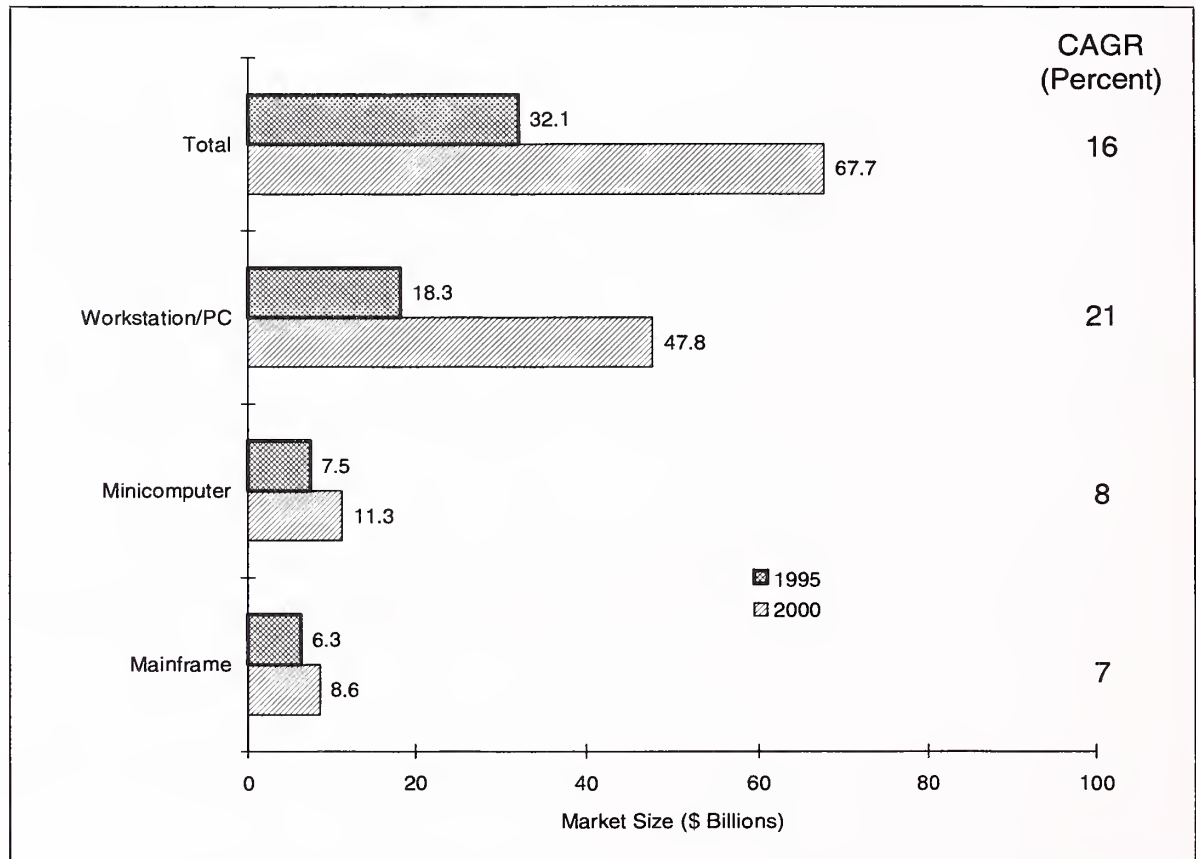
Source: INPUT

B

Applications Software Products Market

1. Forces Promoting Growth

Many applications software products vendors had very strong growth in 1994, with some posting revenue increases of more than 100% over the previous year. In general, the big got bigger either through acquisition of complementary businesses, strategic partnerships or innovative new product development. There were some notable exceptions as smaller businesses tried to compete with suppliers that have achieved market dominance.

Several applications software companies that outperformed the market were early innovators of client/server-based solutions and/or early adopters of open systems technology.

Significant driving forces for the applications software products market are listed in Exhibit V-11.

Exhibit V-11

Applications Software Products Market—Forces Driving Growth

- Client/server computing
- Continued technology development
- Movement away from in-house development
- Creative marketing approaches

Source: INPUT

Client/Server: The embracing of client/server solutions by buyers has had a significant effect on growth in applications software purchases. In fact, those software companies that were early providers of client/server products were among those yielding the highest revenue growth in 1994.

However, the complexities of implementing these distributed, network-based systems makes it difficult to measure success by traditional return-on-investment and length-of-payback models. In many cases, cost reduction is not a major early outcome. Rather, at this stage of development, the technology might be measured more by qualitative standards such as improved decision support capabilities and increased flexibility of application development.

INPUT believes that larger computer systems and systems software companies with strong application development tool frameworks for corporate-wide application development are best positioned for the enterprise-wide applications solutions markets. A principal benefit that companies with broad-based application development tool technology can bring to this market is more product application, product development and maintenance.

Along with this, the improvement in fourth- and fifth-generation application development tools (including object-oriented application development tools) will increase the efficiencies of software product development and maintenance, and thus provide added support for developing new solutions for the lower-cost hardware platforms.

Continued Technology Development: Just when it seems that the applications software market is becoming saturated, a new need or technology comes along, opening up a whole new market for products. The intense interest in the Internet at this time is opening up a market for products. The introduction of Windows 95 may well spur increased demand for cross-industry products. Software providers that stay on top of current trends and can get new products to market to conform to such trends will maintain an advantage over competitors.

Movement Away from In-house Development: In part due to developments in client/server computing and trends to migrate from the mainframe to distributed systems, industries that traditionally have relied on in-house applications are looking outside for packaged solutions. This provides a strong opportunity for software vendors to expand their business, particularly in industries such as manufacturing and insurance.

Creative Marketing Approaches: Cross-industry applications software vendors have been successful in increasing market penetration through arrangements with hardware suppliers to bundle in their software with PC hardware purchases. While margins on products purchased this way are less, increased volume and product name recognition are beneficial. Vendors that have achieved dominance in a particular product have boosted sales of their other products by marketing them in software suites. Vertical industry vendors also use alliances with consultants and systems integrators to boost market sales.

2. Forces Inhibiting Growth

While the factors discussed above build a strong case for increased expenditures for applications software products, there are also some considerations that could inhibit growth, as shown in Exhibit V-12.

Exhibit V-12

Applications Software Products Market—Forces Inhibiting Growth

- Unique industry needs
- Pricing concerns

Source: INPUT

Challenge of Addressing Unique Industry Needs: Although opportunities exist to replace internally developed systems in need of update with packaged software, the software vendor needs to also develop products that address the unique needs of the industry or company. For buyers to switch to packaged products, they must be convinced that the vendor understands their requirements and can develop solutions tailored to their needs. In-depth knowledge of particular industries will become increasingly important for applications software products vendors to address more specialized client requirements.

A major source of growth for applications software vendors will be the current in-house-developed product market. However, the complexity of changing to a more customized product solution may be very difficult for many vendors. In particular, it could greatly increase product support costs further down the road, unless vendors can also obtain value-added pricing for professional services such as consulting and software product maintenance.

Pricing Concerns: As competition increases and the market becomes more mature, applications software prices are driven downward. In addition, increased complexities in pricing software products can have a negative effect on potential software revenues. It can be difficult to monitor the breadth of software usage for site licenses. Providers must carefully monitor and review pricing structures to stay competitive and maximize revenues.

Independent software companies must look at alternative distribution channels to effectively address the pricing issue. Alternatives include marketing through software publishers and/or large computer systems/systems software vendors. The latter could help leverage the applications software company's marketing and product support efforts.

C
Turnkey Systems

1. Turnkey Systems Market Overview

Although turnkey systems are not generally expected to experience the strong growth of applications software, this product/service category is expected to hold its own in the next five years, with a projected market of $24.7 billion by 2000, representing a five-year CAGR of 9%.

Turnkey systems are expected to continue to meet specialized needs for specific products customized to address customer needs. A critical measure of success for providers of these systems will be the degree to which their hardware platforms are open, or applications are built upon standard components that can easily be upgraded. Exceptions to this are solutions that are so unique that they represent a niche market. These include specialized requirements unique to the manufacturing and telecommunications equipment market.

a. Forces Promoting Growth

The key driving forces behind turnkey systems growth during the next five years are summarized in Exhibit V-13.

Exhibit V-13

Turnkey Systems—Forces Driving Growth

- Customization
- New product opportunities

Source: INPUT

Customization: Turnkey providers specialize in offering customizable solutions to address applications needs. This approach is particularly

attractive to vertical industries that historically have believed their applications to be far too unique, complex, large, specialized, etc., to be addressed adequately through prepackaged solutions. Addressing these buyers' needs may require integration of a variety of products, customization and/or user support. Turnkey systems vendors have been better positioned than applications software vendors to address specialized needs. They have also focused their efforts on specific vertical markets. This knowledge of vertical markets, coupled with their experience in putting together solutions as part of their offerings, positions them well to address unique needs. Turnkey systems vendors are equipped to seize this market opportunity because their focus is to address a need by providing software packaged with hardware, supported with professional services. These vendors are often referred to as value-added resellers (VARs) due to the emphasis placed on the value they add to the generic hardware and software.

New Product Opportunities: As new technologies or offerings are developed, they are often initially best addressed through turnkey systems products. For example, imaging and CAD/CAM systems were introduced as part of an integrated turnkey solution. Eventually, some products that began as part of a turnkey solution can be provided through applications software products. An infusion of new products and the related complexity of delivering solutions fuels the turnkey systems/VAR channel, where turnkey systems vendors/ VARs add necessary customization.

As the lines between turnkey systems and applications software continue to blur, the provider that offers the flexibility to address requirements in the most efficient way will have the advantage in the future.

b. Forces Inhibiting Growth

Growth for the turnkey systems product/service category will be inhibited by the factors listed in Exhibit V-14.

Exhibit V-14

Turnkey Systems—Forces Inhibiting Growth

- Movement towards open systems client/server computing
- Applications software vendor competition

Source: INPUT

Open Systems/Client/Server Computing: These two industry trends focus on providing solutions that are scaleable and operate in a multiplatform environment. Such an approach moves away from the tight integration of hardware and software that has been a key part of turnkey systems. The role of turnkey solutions within this environment is still unclear.

Applications Software: As hardware becomes a less profitable part of the package, turnkey systems vendors turn their attention to the software and professional services part of their service. This shift puts turnkey systems vendors in head-to-head competition with software companies, along with systems integrators. The differences between these product service categories are likely to become less defined as customers demand customized solutions to address their business needs.

2. Forecast of Turnkey Systems Market by Submode, 1995-2000

Exhibit V-15 presents the market projections for turnkey systems by submode.

Exhibit V-15

U.S. Turnkey Systems Market by Submode, 1995-2000
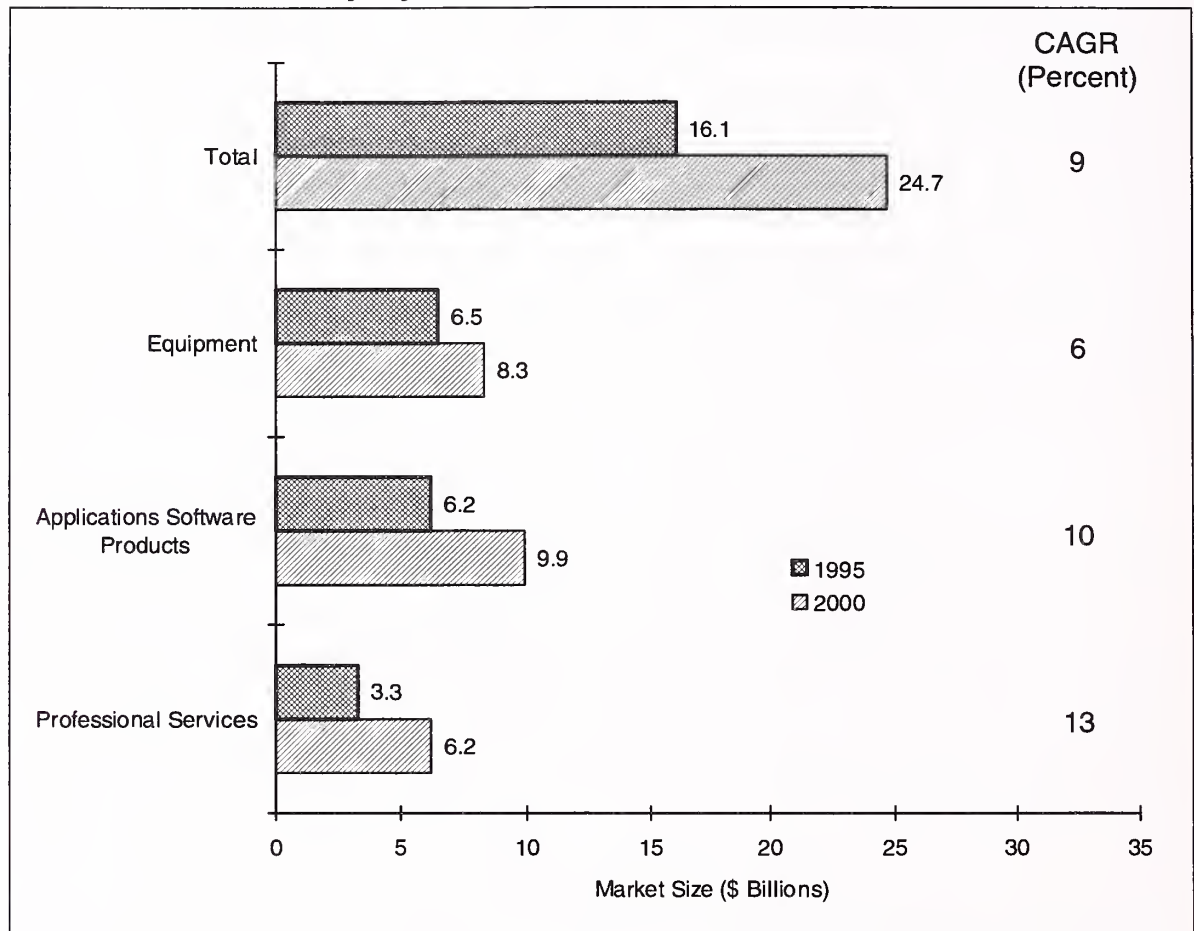
Source: INPUT

The equipment portion of turnkey systems will continue to achieve only modest growth (6%) as a portion of the market. However, introduction of new hardware to address the market for client/server solutions could provide some enhanced opportunity for hardware equipment sales. Also, as hardware vendors seek new channels of distribution they will have incentive to negotiate favorable arrangements with turnkey vendors.

The applications software products portion of turnkey systems should grow at a compound annual growth rate of 10% through the year 2000. Favorably impacting growth in this submode will be an increase in the availability of new applications software products from independent software and systems vendors who are seeking alternative channels of distribution.

Professional services, including systems integration, client/server implementation and customization, will attract VARs because of the higher margin potential with value-added pricing approaches. Growth in professional services is projected at 13%.

3. Forecast by Industry-Specific versus Cross-Industry Sector

Primary markets for turnkey systems vendors are industry-specific markets and specific niche segments within such markets. Examples include hospital management, physicians' group practice and insurance agency systems.

The strongest industry-specific markets for turnkey systems vendors are listed in Exhibit V-16.

Exhibit V-16

Turnkey Systems Industry-Specific Markets

Largest 1994	($ Millions)	Fastest Growing	CAGR (Percent)
Discrete Manufacturing	3,700	Telecommunications	14
Federal Government	1,450	Discrete Manufacturing	13
Banking/Finance	1,250	Process Manufacturing	10
Health Services	1,150	State and Local Government	10
Business Services	1,050		

Source: INPUT

As with applications software products, the largest market and one of the fastest growing for turnkey systems is discrete manufacturing. Much of this growth is in engineering and design application solutions, fueled by major cost/performance improvements in workstation technologies.

The telecommunications turnkey systems market is expected to grow at a somewhat faster rate than other industry-specific markets. Telecommunications turnkey systems represent one product area where there are niche hardware/software integrated solutions that can provide more broad-based solutions than software suppliers. Telecommunications turnkey systems growth also results from the specific need for an increasing number of application-driven services such as voice messaging, E-mail and EDI. Cable TV suppliers also make greater use of turnkey systems as they broaden their service offerings.

The health services turnkey market's growth rate is projected at 6%, lower than the 8% previously forecast. Today many medical industry turnkey and applications software vendors write their systems on generic PC platforms. They usually bundle the software with the lower-cost PC hardware or leave it to the buyer to purchase compatible hardware from one or more of the PC hardware vendors.

As seen in Exhibit V-17, turnkey systems expenditures for cross-industry applications are considerably less, with accounting leading the list with almost $500 million in expenditures in 1994.

Exhibit V-17

Turnkey Systems Cross-Industry Markets

Largest 1994	($ Millions)	Fastest Growing	CAGR (Percent)
Accounting	500	Education/Training	10
Sales/Marketing	350	Sales/Marketing	5
Education/Training	165		

Source: INPUT

Growth in turnkey purchases by cross-industry sectors should be modest, generally in the 5%-or-less range. Buyers are expected to be less likely to purchase cross-industry solutions as part of a turnkey package. For many of these applications, expenditures are likely to be for replacement packages. Requirements are generic enough that it is more cost-effective to purchase software separately from hardware.

Higher growth rates are expected in the education and training area. Turnkey systems in this area will continue to be popular because they can be delivered with equipment such as CD-ROMs and video disks for interactive graphics applications, which should find strong usage in training applications.

VI

Competitive Environment

The *U.S. Industrial Outlook* has noted that "packaged software is one of the fastest growing sectors of the economy." Validated trends include continued software company consolidations and the continuing growth of software giants. In addition, it is expected that more companies will offer and support off-the-shelf applications solutions. As this chapter shows, these are continuing trends with significant implications for the applications solutions marketplace.

A
Vendor Competition

1. Mergers, Acquisitions and Partnerships

Mergers and acquisitions continue to be commonplace in the software industry. Growth opportunities for entrepreneurial ventures can be limited when competing head to head with the market leaders. Industry leaders must expand their product offerings as certain applications markets become saturated. Acquisitions offer such large companies, with deep pockets, the ability to achieve market dominance in new product areas quickly by purchasing the expertise rather than following the time-consuming process of developing a product in a new area. Name recognition and product track record place the company in a strong position for quick growth.

Exhibit VI-1 describes some of the merger and acquisition activity that has occurred.

Exhibit VI-1

Acquisitions—Applications Solutions Industry

Company Name	Acquisition
Novell	WordPerfect and Quatropro Spreadsheets
Sterling Software	KnowledgeWare
Computer Associates	ASK Group and Legent
IBM	Lotus
Banyan	Beyond
Symnatec	Central Point Software
Compuware	Uniface
Mergers	
Adobe and Aldus	
Must Software International and Alsys	

Source: INPUT

With the growing importance of the Internet come new opportunities for applications solutions vendors to expand product offerings. For many, the best way to do this is through mergers, acquisitions or liaisons. Networking, communications and gateway requirements associated with the Internet require very specific capabilities for software providers. As we've seen with vendors such as SAP America, and PeopleSoft in client/server technology and Netscape in the Internet browser arena, those who can get product offerings to market quickly enjoy a market dominance that can be difficult for others to penetrate. Software vendors more than ever need to team up with partners to supplement their own expertise in providing integrated solutions.

Buyers, now attuned to purchasing *solutions* rather than just packages, look for the best of all worlds with expertise not only in software, but also systems integration and communication. Some of the software vendors that have achieved the highest rate of success in the last year have made it an integral part of their plan to work closely with related suppliers to address customer needs.

As companies move more toward a vertical market approach, alliances with related suppliers having a recognized track record in each of these markets will be critical to developing credibility and achieving success.

2. Service and Customization Opportunities

The move toward client/server brings a host of complex product development, integration and support issues. The ease with which a product can be tailored and the increased availability of tools with which to do this are compelling selling points.

The ability of users to gain value from today's client/server applications products is predicated on some level of customization. This requires sophisticated application development tool capability and can also increase the complexity of product support.

For vendors to maintain profitability levels in such an environment, they must obtain value-added pricing from a host of complementary services, including alternative maintenance and service/support contracts that recognize the higher vendor costs related to customized product development and maintenance. The larger equipment and systems integration vendors can more easily move into the area of application development outsourcing, which is the large available potential market for applications solutions vendors.

3. Dominance of Large Vendors

Software companies and entrepreneurial ventures historically have gone hand in hand. Even some of today's largest software companies began as small business partnerships. While this pattern continues, with new companies continually emerging to address market niches, recent years have shown the emergence of industry giants that dominate the software industry. Most notably, Microsoft has become to the software industry what IBM has been to the hardware industry.

Industry giants heavily influence the direction of their particular applications software product markets. For example, companies such as Lotus and Borland have realized revenue losses due to the dominance of Microsoft in the desktop products arena. (Lotus' revenues dropped 1%, while Borland suffered a loss of 46% in 1994.)

In May of this year *Information Week* released its list of the "Top 50 Software Vendors" for 1995. In July 1995, *Software Magazine* released its list of the "Top 100 Independent Software Vendors" for 1995. Both listings illustrate the continual growth of the market leaders to dominate the industry. *Software Magazine* reported that the top 10 software firms earn about 63% of the total revenue of the top 100 companies. Microsoft's lead continues to be strong—achieving a third of the revenues achieved by the top 10 companies. It achieved 29% growth in 1994, while second-ranked Computer Associates' growth was 19%. The health of the software industry can be measured by the large number of companies with revenue growth exceeding 50%. The business pages attest to growth with ever-increasing numbers of software companies going public. Most recently, Netscape after less than two years in operation, achieved dominance in the Internet browser market, and had dramatic success on Wall Street with stock prices more than tripling in the first day of the public offering.

Companies that have invested heavily in providing client/server solutions have been rewarded handsomely for their efforts. SAP, for instance, achieved a revenue growth of 157% in 1994 with the strong success of its client/server financial solutions. Other companies, further down on the list, have been achieving strong growth due to their open systems, client/server offerings. This includes companies such as PeopleSoft, BAAN, a provider of financial and manufacturing applications and Business Objects, a provider of decision support solutions. The tremendous interest in the Internet points to the growth potential for software vendors that can address needs in this market.

The trend toward increased market share for large vendors will almost certainly continue, and many small to midsized companies will need to work with larger strategic partners or be acquired in order to survive. Several factors increase the difficulty of competing in the applications solutions markets: the increasing complexity of product offerings, especially in the client/server environment, impacting new product development costs; the trend toward software product price declines; higher product support costs resulting from greater product complexity; and market saturation in a number of product areas, requiring greater marketing sophistication to reach the larger available applications solutions markets. However, the success of small start-up companies with client/server-based solutions, such as PeopleSoft, attests to continuing possibilities for entrepreneurial firms to succeed in an environment of large, well-entrenched competitors.

Many turnkey systems vendors have struggled with price declines in both hardware and software. Several went through major transitions in order to survive. These transitions have involved changing from a proprietary hardware focus to an open systems hardware platform, placing a greater emphasis on value-added software and professional services.

B
Leading Vendors

The leading applications solutions vendors are shown in Exhibits VI-2 and VI-3. Revenues for each company are developed from INPUT's vendor files and surveys.

Exhibit VI-2

Leading U.S. Independent Vendors of
Applications Software Products—1994 Revenue

Vendor	1994 Revenue * ($ Million)
Microsoft	2,522.0
Computer Associates	1,251.0
Oracle	700.0
Lotus (now part of IBM)	504.8
SAP America	267.4
American Management Systems	255.3
SAS Institute	240.9
Dun & Bradstreet	212.8
Sterling Software	181.2

* INPUT estimate includes only U.S. revenue for applications software products.   *Source: INPUT*

Exhibit VI-3

Leading U.S. Turnkey Systems Vendors

Vendor	1994 Revenue ($ Million)
Intergraph	1,041
Mentor Graphics	348
Gerber Scientific	261
HSO & Co.	200

Source: INPUT

Attributes of success for these companies include how quickly they have addressed new technology demands. The most successful companies in 1994 were those that provided client/server solutions and addressed demand for open systems by providing solutions for a variety of platforms. These were companies that jumped into the market quickly and were flexible enough to address customer needs. The next wave of successful software companies will be those that can adapt their products to the growing interest in and use of the Internet. As users browse the network and begin to recognize potential uses for it, software vendors need to stay one step ahead, anticipating that need and providing solutions as quickly as possible.

Another attribute of success favors companies that have developed strong strategic alliances and a vertical market focus. Understanding the business requirements of their customers and providing solutions to meet their unique needs most likely will require strong relationships with related suppliers whose products and services supplement packaged applications software products.

Following are profiles of three applications solutions companies (applications software products and turnkey systems). They are three of the most successful firms currently operating in this marketplace. Exhibit VI-4 lists these firms.

Exhibit VI-4

Vendors Profiled

- SAP America, Inc.
- PeopleSoft
- Microsoft Corp.

Source: INPUT

1. SAP America, Inc.

International Court Three
300 Stevens Drive
Philadelphia, PA 19113
Phone: (610) 521-4500
Fax: (610) 595-4910

Chairman: Klaus P. Besier
Status: Subsidiary
Total Employees: 1,000 (12/94)
Total Revenue: $367,000,000
Fiscal Year End: 12/31/94

a. Key Points

SAP America's revenue has grown at an average annual growth rate of 130% over the past five years, with 1994 revenues reaching $367 million and the number of North American product installations rising to 300.

In October, 1994, SAP announced a streamlined user-based pricing structure for its R/3 client/server business applications to simplify the license process and easy contract administration over time.

In late 1994, SAP announced a new initiative—Industry Centers of Expertise (ICOEs)—which combines targeted software solutions and industry-specific consulting services to enable SAP customers to tackle information management challenges that are unique to their lines of business. The following ICOEs have been introduced: High Technology and Electronics, Oil & Gas, Utilities, Healthcare, Consumer Packaged Goods and Chemical/Pharmaceutical.

In August, 1994, R/3 became available for the Microsoft Windows NT platform. In September 1994, R/3 was made available for the newest version of Windows NT, version 3.

b. Company Description

SAP America, Inc. markets and supports the mainframe-based R/2 system and the client/server based R/3 system—fully integrated enterprise-wide applications software systems designed to integrate the information needs of Fortune 2000 companies. SAP America operates as a wholly owned subsidiary of SAP AG. SAP was originally established in January 1988 to market the R/2 system in the U.S.

c. Strategy

The company's corporate mission is to provide high-quality software technology and support services that allow organizations to quickly, easily and cost effectively support their existing and emerging business needs. SAP America is committed to the business applications arena and to understanding the challenges facing businesses in implementing enterprise technology solutions. Part of its strategy includes:

- Continuing to promote and enhance R/3 client/server offerings, including significant investments in research and development

- Targeting and expanding within specific vertical markets through its Industry Centers of Expertise program to speed implementations and provide specific solutions for target industries

- Working closely with partners to help implement and support its products

SAP software provides real-time integration of all business applications and can become fully integrated with multiple operating systems, software and technologies.

d. Financial

SAP America's 1994 revenue reached an estimated $367 million, a 157% increase over 1993 revenue of $140 million.

Approximately 75% of SAP America's 1994 revenue was derived from applications software product sales and 25% from consulting, training and professional services. About 80% of its revenue is derived from the discrete and process manufacturing industries. The remaining 20% comes from utilities, universities, city government, health care and services.

e. Key Products

SAP offers two integrated business applications software product lines—the R/2 system for mainframes and the R/3 system for client/server environments. The application modules for these systems run separately and on top of the Basis System middleware, which contains the development tools for the systems and provides interface capabilities to access SAP's development environment, data dictionary and customization and centralized tables.

The R/3 system runs on a range of platforms, including IBM AIX, HP-UX, Sun Solaris, Windows NT, Data General (NT), DEC OSF/1, AT&T (NT), Bull BOS/x and SNI SINIX and is compatible with various databases, including Oracle, Informix and Adabas.

R/3's three tiered client/server architecture separates the machines on a system into three function groups—database, application and presentation.

SAP also offers the ABAP/4 Development Workbench (ABAP/4/DW), a client/server development tool for open, portable and highly scaleable client/server applications.

f. Key Services

SAP America's Professional Services unit, greatly expanded in 1994, is responsible for training, education, corporate consulting, development, technology, internal systems and the technical support hotline.

SAP consultants assist in all areas of support, including presales assistance, technical and applications consulting, software upgrade installation, education and training.

SAP software customers receive software maintenance free of charge for six months from the data of software delivery. After the first six months, maintenance services are available annually for 15% of the annual license fee.

g. Alliances

SAP America works closely with its various partners to provide support to its software clients. SAP America's Logo Partners program offers management and technical consulting to SAP North American clients, enhancing SAP America's internal training and support.

Logo Partners have resources trained in SAP product installation and support dedicated to SAP products supplementing SAP America's expertise in vertical markets and offering various professional services, including business process reengineering, implementation, systems integration, project management and user training.

2. PeopleSoft, Inc.

4440 Rosewood Drive
Pleasanton, CA 94588-3031
Phone: (510) 225-3000
Fax: (510) 225-3100

Chairman & CEO: David A. Duffield
Status: Public
Employees: 791 (4/95)
Revenue: $112,895,000
FYE: 12/31/94

a. Key Points

PeopleSoft specializes in financial management, distribution and human resources client/server applications software products.

PeopleSoft has achieved an average growth rate of 134% over the last five years. Revenue for 1994 reached nearly $113 million, a 94% increase over 1993.

In April 1995, PeopleSoft established the PeopleSoft Open Workflow Partners Program, which will enable customers to use third-party workflow technologies, including interactive voice response, electronic mail, electronic forms and kiosks, with PeopleSoft Financials, Distribution and HRMS product lines.

In January 1995, the company introduced three major new products, including PeopleSoft Financials 3, PeopleSoft Distribution and PeopleSoft Financials for Public Sector.

PeopleSoft is actively pursuing new vertical market initiatives targeted at the health care, logistics, materials management, public sector and higher education markets.

b. Company Description

PeopleSoft, founded in 1987, designs, develops, markets and supports client/server financial system business applications, distribution applications and human resource management products for large to medium-sized organizations worldwide.

The PeopleSoft product family includes PeopleSoft Financial, PeopleSoft Distribution and PeopleSoft HRMS, integrated suites of client/server business applications and PeopleTools, a complete set of client/server tools for application development and reporting.

All PeopleSoft products are based on the Windows graphic user interface (GUI) and support a choice of relational database management systems (RDBMS), including DB2, Informix, Oracle, SQLBase and SQL Server, running on mainframe, minicomputer or LAN server platforms.

c. Strategy

PeopleSoft's mission is to be the market leader in client/server business applications software.

Elements of the company's strategy include:

- Supporting new and emerging technology standards as they are embraced

- Expanding its product line, including additional modules to the PeopleSoft Financials, PeopleSoft Distribution and PeopleSoft HRMS product families, as well as developing products for certain vertical markets, including the public sector and higher education

- Introducing the PeopleSoft Manufacturing line of client/server applications by early 1996. Already under development since September 1994, PeopleSoft Manufacturing will initially consist of seven modules.

PeopleSoft has specifically designed its products to work on the client/server model of computing. In this model, processing is distributed between a personal computer client and the server, with clients running Microsoft Windows or Windows NT connected to the following server platforms: MVS, VMS, UNIX, MPE, OS/2 and Windows NT. The products work on a wide range of hardware platforms, including IBM mainframes, UNIX-based minicomputers for Digital Equipment Corporation, Hewlett-Packard computers and personal computers operating on a local-area network.

d. Financials

PeopleSoft's 1994 revenue reached $112.9 million, nearly double the 1993 revenue of $58.2 million. Net income rose from $8.4 million in 1993 to $14.5 million in 1994.

PeopleSoft management attributes 1994 results to the following:

- License fees increased 82% due to increased acceptance of the company's products.

- License fees from PeopleSoft Financials rose from $7.3 million in 1993 to $13.6 million in 1994.

- Revenues from services rose 116% during 1994 as compared with a 111% increase during 1993.

For 1994, approximately 74% of license revenue came from PeopleSoft HRMS products and 26% from PeopleSoft Financials products. Approximately 61% of 1994 revenue was derived from software license fees and the remaining 39% from maintenance, training, support and consulting services.

PeopleSoft has nearly 600 customers worldwide in the manufacturing, transportation, technology, financial services, health care, pharmaceutical, utility, transportation, education and government sectors.

e. Key Products and Services

PeopleSoft's products were designed specifically for client/server environments, are integrated with Microsoft Windows, include an advanced graphical user interface, support a variety of popular RDBMSs and work with PeopleSoft's integrated application development tool—PeopleTools.

PeopleSoft's products operate on a range of hardware platforms, including IBM mainframes, UNIX-based minicomputers from DEC, HP, and others and PCs operating on LANs.

f. Alliances

A key aspect of PeopleSoft's sales and marketing strategy is to build and maintain strong working relationships with businesses that PeopleSoft believes play an important role in the successful marketing of its products. These include the following:

- Hardware vendors

- RDBMS vendors

- PeopleSoft Financials, Manufacturing and HRMS Implementation Partners—Technology consulting firms providing PeopleSoft Financials and HRMS customers with various implementation solutions to help them move to client/server-based systems

- Application Partners—Provide software products that are complementary to PeopleSoft's products

- System Integration Partners

- Open Workflow Partners

3. Microsoft Corporation

One Microsoft Way
Redmond, WA 98052-6399
Phone: (206) 882-8080
Fax: (206) 936-7329

Chairman & CEO: William H. Gates
Status: Public
Total Employees: 15,257 (6/94)
Total Revenue: $4,649,000,000
Fiscal Year End: 6/30/94

a. Key Points

Microsoft's Windows operating system is at the core of the company's systems strategy.

- In February 1995, Microsoft acquired RendorMorphics Ltd., a London-based developer of three-dimensional graphics programming tools. Microsoft plans to integrate the 3-D application programming interface (API) in future versions of Windows.

- In November 1994, Microsoft bought Nextbase Ltd., a U.K.-based interactive mapping and route-planning software firm.

- In August 1995, Microsoft introduced the long-awaited Windows 95 operating system, including the integration of Microsoft Network (MSN), which is intended to thrust Microsoft into the transaction processing market for electronic commerce.

- In 1994, Microsoft signed an agreement with Visa International that will allow secure electronic credit card transactions using encryption.

b. Company Description

Microsoft Corporation was founded as a partnership in 1975 and was incorporated in 1981. The company develops, manufactures, markets and supports microcomputer systems and applications software products and related books, hardware and multimedia products. The company is currently organized into three main groups as follows:

- The Products Group consists of five divisions, each responsible for a particular area of software development, technology development and product marketing.

- The Sales and Support Group manages Channels that serve users, organizations and original equipment manufacturers (OEMs).

- The Operations Group is responsible for business operations and overall business planning.

c. Strategy

Microsoft's business strategy emphasizes the development of a broad line of microcomputer software products, including operating systems for personal computers, office machines and personal home devices. Microsoft's marketing strategy calls for increasing its customer support services in order to attract big corporations and increase its market share. The company is working with value-added resellers, OEMs and consultants to strengthen areas of weakness such as networking and vertical markets.

Microsoft's product strategy focuses on client/server development in an attempt to build client/server momentum from the ground up. The company is designing its operating system products for new hardware platforms— operating systems that serve as the heart of a new era of client/server computing.

Microsoft Network will thrust Microsoft into the transaction processing market for electronic commerce, including access and search software for consumer and business procurement, catalog listings by equipment and software vendors and payment systems to complete the procurement process.

d. Financials

Total fiscal 1994 revenue reached $4.65 billion, a 24% increase over fiscal 1993 revenue of $3.75 billion. Net income rose 20%, from $953 million in fiscal 1993 to more than $1.1 billion in fiscal 1994. Factors leading to the revenue growth were:

- Strong performance by Microsoft Office

- Increased sales of the Microsoft Windows operating system

- Rise in sales of the consumer products division

OEM channel revenues increased 61% in fiscal 1994, as compared to 53% in fiscal 1993. The major factors contributing to the OEM revenues were sales of MS-DOS and Microsoft Windows operating systems. Approximately 33% of Microsoft's fiscal 1994 revenue was derived from systems software products, 63% from applications software products and 4% from hardware products. Applications product group revenues rose 30% during fiscal 1994. Increases in revenues were attributed mainly to sales of Windows-based products, particularly The Microsoft Office, which includes Microsoft Excel, Microsoft Word, a Microsoft Mail license, Microsoft PowerPoint presentation graphics program and Microsoft Access.

e. Key Products and Services

Microsoft's current product and service offerings are summarized by division as follows:

- Personal Operating Systems Division: develops desktop operating systems software, including MS-DOS, Windows, Windows for Workgroups. The company recently introduced a Windows 95 desktop personal operating system designed to replace MS-DOS, Windows and Windows for Workgroups. It is a 32-bit operating system compatible with existing software applications.

- Business Systems Division: this division is responsible for developing business solutions such as Microsoft Windows NT workstation, LAN Manager, Microsoft Mail, Microsoft Schedule and Microsoft at Work.

- Desktop Applications Division: develops applications software products that include word processing, spreadsheets, graphics and project management applications.

- Developer Division: offers software development tools and database products.

- Consumer division develops and markets various products designed for small businesses, schools and homes.

VII

Conclusions and Recommendations

A
Conclusions

INPUT has drawn a number of conclusions about the direction of the applications solutions markets based on interviews with IS decision makers, discussions with vendors serving these markets, and an extensive review of secondary sources. These conclusions are summarized in Exhibit VII-1 and are described in this chapter, along with relevant recommendations.

Exhibit VII-1

Conclusions

- Continued strong growth in applications software
- Turnkey systems vendors must integrate with client/server environment
- Continued emphasis on open systems
- Market demand for client/server products
- The Internet offers unique opportunity
- Leveraging alliances is critical

Source: INPUT

1. Continued Strong Growth in Applications Software

INPUT's forecast indicates that the applications software market will continue to grow at a healthy rate over the next five years, offering excellent opportunities to software products vendors. While the market for certain products is maturing, particularly in the cross-industry area, opportunities for vendors of products specific to vertical markets are strong. In industries such as insurance and manufacturing, businesses are making a commitment to migrate from their long-standing legacy systems to a more distributed, integrated approach and are looking for prepackaged software that can address their needs. Even in the cross-industry area, changing standards and technology offer opportunities to vendors. Many believe that the rich

capabilities of the Windows 95 operating system cannot be gained through existing software and that users will be waiting for new products that will be specifically developed for this operating environment.

2. Turnkey Systems Vendors Must Embrace the Client/Server Environment

Turnkey systems continue to address specialized needs, particularly in the CAD environment. Though general trends point to flexibility in choosing applications software independently from hardware, turnkey systems fill a demand for niche products and are often required in new technology product areas. For this market to continue to grow, it must develop its products to conform with standards and integrate into enterprise-wide client/server systems. Turnkey vendors need to be on the cutting edge of new technology developments to plan new products that offer advantages over applications software solutions.

3. Continued Emphasis on Products for Open Environment

Proprietary solutions are migrating to a more open environment. While the complexities involved in this process make it lengthy, it is clear that new product development needs to consider the benefits of operating in an open environment and conforming to related standards.

4. Market Demand for Client/Server Products

As evidenced by the success of the early providers of client/server products, users are clearly moving in this direction. While some exceptions exist in specific areas where alternative solutions are long-standing, the use of this architecture has gained strong momentum. As many of the applications solutions vendors that were interviewed noted, their customers have embraced this approach and expect to find product offerings in this area. Many vendors have developed products in the client/server arena and most indicate that it has been a big boost to their business. The market for client/server products is not expected to be saturated for many years to come.

5. The Internet Offers a Unique Opportunity for Software Vendors

The fact that new technologies, architectures, and standards are continually evolving in the computer industry is good news for applications solutions vendors. Just as a market begins to get saturated, a new operating system or standard comes along that provides an opportunity for a new product. Applications solutions vendors must continually take note of the new technology or changes that offer, or will lead to, product opportunities.

The most recent "new" development is the intense business interest in the Internet and the World Wide Web. Software providers have opportunities related to obtaining strategic information, marketing their own products and distributing their products over the Internet. In addition, there will be demand for new types of applications solutions products (e.g., browsers) to make use of the Internet.

6. Leveraging Alliances Is Critical to Success

The applications solutions market today is far more complex than it has ever been before. There are more buyers of different products looking for integration, ease of use and functionality, and these complex demands present a challenge to the software vendor. Likewise, the buyer has so many choices and so many technology issues to take into consideration that there are many opportunities for confusion. The buyer is afraid of making the wrong choice or that the choice made will not address unique requirements. Frequently, products are chosen due to name recognition or a recommendation from colleagues in the same industry or area.

Applications solutions vendors need to continue to leverage their alliances in order to market their products to the broadest base of prospects. This can involve using or establishing relationships with industry experts, hardware providers or consultants and third-party providers.

B
Recommendations

Based on the conclusions described above, INPUT offers the following recommendations for vendors of applications solutions. These are listed in Exhibit VII-2 and are described below:

Exhibit VII-2

Recommendations

- Product development strategy must embrace client/server and open solutions
- Take advantage of expanded marketing opportunities
- Plan now for product distribution and support over the Internet
- Develop creative pricing strategies
- Provide more industry-specific solutions

Source: INPUT

1. Product Development Strategy Must Embrace Client/Server and Open Solutions

Vendors must develop products to operate in a client/server environment and to address the growing need for open solutions that are platform independent. Many companies in industries such as manufacturing and insurance have made strategic decisions to move in this direction, but the process of implementing such changes takes place slowly and is occurring over time. This is creating a strong market for client/server products in the next several years. Vendors need to develop products that can address these needs as they evolve.

The move toward standards and open systems has been a slow process, complicated by various product introductions that have taken place along the way. Vendors must be aware of de facto standards as they develop and be ready to offer products that conform to those standards.

Buyers today seek solutions that will work on multiple platforms and operating systems. Product standardization will make it easier for buyers to use technology as a tool to support their businesses while insulating them from the technical aspects of computer systems.

In order to support a multivendor and multiplatform strategy, turnkey vendors must either diminish reliance on hardware or support a broad range of hardware platforms. Vendors are under increasing pressure to open their systems. Customers may want turnkey solutions, but they don't want to be locked into what they perceive to be proprietary solutions rather than open system alternatives.

2. Take Advantage of Expanded Marketing Opportunities

While direct sale of software continues to be the preferred marketing approach of applications solutions vendors today, the changing market demands that alterations be made to reach more potential buyers. Alternate channels of distribution include liaisons with systems vendors, systems integrators, distributors, consultants and VARs. Strategic alliances allow vendors to team up with providers of complementary products and services to more closely meet customer requirements for a total solution. Relationships with industry experts can open doors to new opportunities and provide more product credibility in the marketplace.

In particular, computer systems and application development tools vendors are strong partners, because they provide the interconnectivity/operability requirements across platforms in a distributed processing environment.

Bundling of software with hardware sales is an increasingly popular trend. Vendors need to insure that alliances with hardware vendors are maintained so as to keep their competitive positioning.

Applications solutions vendors can also profit from developing relationships with key customers that can be used for reference selling to other businesses in that industry.

3. Plan Now for Product Distribution and Support Over the Internet

Internet usage is growing exponentially with each passing month. Companies that have set up home pages or other uses of the network for experimental purposes have been surprised to realize the extent to which users are accessing the available information and responding to inquiries over the Internet. Recent advances in security promise to spur even greater uses of the Internet. Many businesses in a variety of industries are preparing now for handling transactions over the Internet. Banking institutions are preparing to allow customers to use the Internet to conduct banking business. Likewise, applications solutions providers need to be poised to move ahead with more aggressive use of the Internet, as security becomes less of an issue in the future.

The ability to actually distribute software or offer software trials over the Internet provides tremendous flexibility to the buyer and has the capability to stimulate growth overall. Those vendors that offer flexibility in product distribution will be at an advantage—particularly for those products that are highly competitive. Yet there are a number of technical and functional issues to be addressed to be able to make this a reality. INPUT bleieves that applications vendors must begin working now to identify and resolve such issues in order to be prepared to move forward as rapidly as possible.

The Internet also offers the capability of providing technical or product support, and minimizing the labor-intensive support function that is in place in many companies today.

Though many software providers currently have a home page on the Internet, very few have very specific plans for expanded marketing or distribution of products over the Internet. Plans for technical support are also limited. Providers that make use of the Internet will have a huge advantage over their slower paced competitors. Not only will there be savings in marketing and sales costs, but they will have high visibility in their potential market. Those that are slower to use the Internet will be in a competitively weaker position.

4. Develop Creative Pricing Strategies

We've seen that with the move to distributed systems and client/server architecture, pricing applications software is becoming increasingly complex. No longer can it be based on the size of the machine, and increasingly it is more related to how the software is used rather than upon which hardware it resides. This brings up a number of issues. How do you price on a per-user basis when the amount each person uses the software varies widely? Also, how do you prevent expanded use of software beyond the original limits of the site license? The physical location of the software, user workstation or individual using the software will become less and less significant. Users will be accessing the software from various company and other locations. Software vendors need to perform detailed, up-front analysis regarding their clients' proposed use of software. Licenses should take this usage pattern into account and place specific limits on such usage. Likewise, vendors should have mechanisms in place to expand licenses as needed, thereby generating increased revenue to the vendor. Clients will continue to have expanding needs, and successful vendors will maintain an ongoing relationship to position themselves to address these expanding opportunities.

Pricing is a complex issue as new technologies and changes make old pricing structures inequitable. Vendors need to continually reevaluate their approach to pricing to stay competitive and achieve acceptable profit margins. Sensitivity to user needs will also be a critical factor in successful pricing strategies.

5. Provide More Industry-Specific Solutions

A major opportunity for software providers today is the potential to provide prepackaged solutions to companies that have previously developed such solutions in-house. Historically, companies in manufacturing, insurance, and telecommunications have believed their needs to be too unique to be addressed through packaged software. Indeed, in some industries, such as process manufacturing, very few products were available for that market. However, attitudes have changed with the migration to client/server computing and many companies in these industries are looking to change their long-standing legacy systems to conform to this environment. Applications solutions vendors need to look carefully at the industry solutions they can provide. By working with their strategic partners to develop a successful product solution for specific customers in that industry, they can develop a success story to reference-sell to prospects.
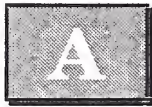
Forecast Database

A

Forecast Database

Exhibits A-1 through A-6 present the detailed 1995-2000 forecast for applications software products and turnkey systems. The forecasts are presented by platform size and submode and by market sector.

Exhibit A-1

Applications Software and Turnkey Systems
Market Size by Product/Service Category, 1995-2000

Product/Service Markets	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Industry Total	42,784	13	48,211	54,629	61,905	70,288	80,304	92,371	14
Applications Software	28,003	15	32,111	36,998	42,724	49,451	57,642	67,655	16
- Mainframe	5,907	7	6,305	6,734	7,171	7,615	8,093	8,639	7
- Minicomputer	6,904	9	7,517	8,179	8,864	9,583	10,379	11,257	8
- Workstation/PC	15,192	20	18,289	22,085	26,689	32,253	39,170	47,759	21
Turnkey Systems	14,781	9	16,100	17,631	19,181	20,837	22,662	24,716	9
- Equipment	6,152	6	6,516	6,946	7,333	7,736	8,167	8,631	6
- Software Products	5,685	10	6,245	6,873	7,539	8,247	9,011	9,852	10
- Professional Services	2,944	13	3,339	3,812	4,309	4,854	5,484	6,233	13

Source: INPUT

Exhibit A-2

Applications Software Products
Market Size by Industry Sector, 1995-2000

Product/Service Markets	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Industry Total	28,003	15	32,111	36,988	42,724	49,451	57,642	67,655	16
Vertical Industry Markets	15,680	15	18,003	20,855	24,231	28,278	33,325	39,691	17
- Banking and Finance	2,615	10	2,871	3,126	3,406	3,671	3,950	4,255	8
- Business Services	1,416	19	1,685	2,021	2,408	2,820	3,368	4,084	19
- Discrete Manufacturing	3,270	21	3,953	4,827	5,962	7,451	9,409	11,997	25
- Education	940	12	1,057	1,193	1,339	1,519	1,728	1,969	13
- Federal Government	816	7	876	999	1,057	1,117	1,186	1,264	8
- Health Services	1,385	12	1,555	1,765	2,007	2,305	2,678	3,121	15
- Insurance	1,117	13	1,263	1,454	1,683	1,947	2,251	2,627	16
- Miscellaneous	315	9	343	374	417	463	524	595	12
- Process Manufacturing	969	16	1,127	1,321	1,555	1,840	2,190	2,629	18
- Retail Sales	389	14	442	515	599	696	805	943	16
- State and Local Government	255	14	291	328	373	425	483	545	13
- Telecommunications	595	21	721	874	1,069	1,309	1,611	1,988	22
- Transportation	552	15	635	708	812	932	1,080	1,267	15
- Utilities	298	13	337	380	429	483	544	616	13
- Wholesale Sales	748	13	847	970	1,115	1,300	1,518	1,791	16
Cross-Industry Markets	12,323	14	14,108	16,143	18,493	21,173	24,317	27,964	15
- Accounting	3,324	13	3,760	4,272	4,892	5,618	6,489	7,555	15
- Education and Training	274	13	309	350	405	472	555	653	16
- Engineering and Scientific	930	12	1,045	1,176	1,325	1,504	1,709	1,959	13
- Human Resources	896	12	1,003	1,113	1,234	1,355	1,483	1,616	10
- Office Systems	3,649	15	4,211	4,907	5,695	6,586	7,689	8,891	16
- Planning and Analysis	2,840	17	3,330	3,830	4,395	5,030	5,715	6,545	14
- Sales and Marketing	410	10	450	495	547	608	677	745	11

Source: INPUT

Exhibit A-3

Mainframe Applications Software Products
Market Size by Industry Sector, 1995-2000

Product/Service Markets	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Industry Total	5,907	7	6,305	6,734	7,171	7,615	8,093	8,639	7
Vertical Industry Markets	3,782	7	4,035	4,319	4,606	4,897	5,217	5,604	7
- Banking and Finance	1,125	9	1,221	1,318	1,411	1,490	1,575	1,670	6
- Business Services	118	1	119	121	123	125	127	128	1
- Discrete Manufacturing	425	5	448	470	495	520	547	575	5
- Education	85	1	86	88	88	89	89	89	1
- Federal Government	122	7	130	144	147	151	162	177	6
- Health Services	430	5	450	472	495	520	540	560	4
- Insurance	364	4	380	410	441	470	500	532	7
- Miscellaneous	12	-8	11	11	10	10	9	8	-6
- Process Manufacturing	216	6	229	244	260	277	297	320	7
- Retail Sales	52	6	55	57	59	61	63	65	3
- State and Local Government	65	6	69	72	75	78	81	84	4
- Telecommunications	267	18	314	367	434	514	609	752	19
- Transportation	167	5	175	183	191	200	210	221	5
- Utilities	59	7	63	67	72	77	83	88	7
- Wholesale Sales	275	4	285	295	305	315	325	335	3
Cross-Industry Markets	2,125	7	2,270	2,415	2,565	2,718	2,876	3,035	6
- Accounting	1,005	9	1,092	1,185	1,285	1,390	1,504	1,623	8
- Education and Training	57	2	58	58	59	59	60	60	1
- Engineering and Scientific	184	8	199	212	225	239	252	265	6
- Human Resources	275	5	290	303	316	329	340	350	4
- Office Systems	159	-2	156	152	147	141	134	126	-4
- Planning and Analysis	250	8	270	290	310	330	350	370	7
- Sales and Marketing	195	5	205	215	223	230	236	241	3

Source: INPUT

Exhibit A-4

Minicomputer Applications Software Products
Market Size by Industry Sector, 1995-2000

Product/Service Markets	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Industry Total	6,904	9	7,517	8,179	8,864	9,583	10,379	11,257	8
Vertical Industry Markets	4,562	10	5,018	5,525	6,058	6,616	7,236	7,926	10
- Banking and Finance	825	10	905	980	1,072	1,150	1,225	1,300	8
- Business Services	268	7	286	320	350	375	396	421	8
- Discrete Manufacturing	1,425	11	1,580	1,747	1,932	2,136	2,362	2,612	11
- Education	210	8	226	240	251	267	284	300	6
- Federal Government	188	6	200	223	231	240	256	278	7
- Health Services	355	7	380	405	430	455	488	521	7
- Insurance	128	4	133	143	152	162	171	180	6
- Miscellaneous	103	4	107	111	115	118	121	124	3
- Process Manufacturing	308	13	349	396	449	509	575	655	13
- Retail Sales	167	12	187	210	230	250	270	290	9
- State and Local Government	50	14	57	65	73	82	92	101	12
- Telecommunications	151	23	185	228	283	350	437	539	24
- Transportation	135	11	150	160	171	182	195	216	8
- Utilities	86	12	96	107	119	130	141	153	10
- Wholesale Sales	163	9	177	190	200	210	223	236	6
Cross-Industry Markets	2,342	7	2,499	2,654	2,806	2,967	3,143	3,331	6
- Accounting	739	7	791	850	912	988	1,070	1,163	8
- Education and Training	30	3	31	31	32	32	33	34	2
- Engineering and Scientific	320	8	347	373	403	434	469	505	8
- Human Resources	298	7	320	340	360	380	400	420	6
- Office Systems	680	7	730	775	810	845	880	915	5
- Planning and Analysis	185	0	185	185	185	180	180	180	-1
- Sales and Marketing	90	6	95	100	104	108	111	114	4

Source: INPUT

Exhibit A-5

Workstation/PC Applications Software Products
Market Size by Industry Sector, 1995-2000

Product/Service Markets	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Industry Total	15,192	20	18,289	22,085	26,689	32,253	39,170	47,759	21
Vertical Industry Markets	7,336	22	8,950	11,011	13,567	16,765	20,872	26,161	24
- Banking and Finance	665	12	745	828	923	1,031	1,150	1,285	12
- Business Services	1,030	24	1,280	1,580	1,935	2,320	2,845	3,535	23
- Discrete Manufacturing	1,420	36	1,925	2,610	3,535	4,795	6,500	8,810	36
- Education	645	16	745	865	1,000	1,163	1,355	1,580	16
- Federal Government	506	8	546	632	679	726	768	809	8
- Health Services	600	21	725	888	1,082	1,330	1,650	2,040	23
- Insurance	625	20	750	901	1,090	1,315	1,580	1,915	21
- Miscellaneous	200	13	225	252	292	335	394	463	16
- Process Manufacturing	445	23	549	681	846	1,054	1,318	1,654	25
- Retail Sales	170	18	200	248	310	385	472	588	24
- State and Local Government	140	18	165	191	225	265	310	360	17
- Telecommunications	177	25	222	279	352	445	656	697	26
- Transportation	250	24	310	365	450	550	675	830	22
- Utilities	153	16	178	206	238	276	320	375	16
- Wholesale Sales	310	24	385	485	610	775	970	1,220	26
Cross-Industry Markets	7,856	19	9,339	11,074	13,122	15,488	18,298	21,598	18
- Accounting	1,580	19	1,877	2,237	2,695	3,240	3,915	4,769	21
- Education and Training	187	18	220	261	314	381	462	559	21
- Engineering and Scientific	426	17	499	591	697	831	988	1,189	19
- Human Resources	323	22	393	470	558	646	743	846	17
- Office Systems	2,810	18	3,325	3,980	4,738	5,600	6,675	7,850	19
- Planning and Analysis	2,405	20	2,875	3,355	3,900	4,520	5,185	5,995	16
- Sales and Marketing	125	20	150	180	220	270	330	390	21

Source: INPUT

Exhibit A-6

Turnkey Systems
Market Size by Industry Sector, 1995-2000

Product/Service Markets	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Industry Total	14,781	9	16,100	17,631	19,181	20,837	22,662	24,716	9
Vertical Industry Markets	13,397	9	14,660	16,132	17,627	19,233	21,004	23,006	9
- Banking and Finance	1,240	11	1,373	1,492	1,615	1,740	1,863	2,002	8
- Business Services	1,069	8	1,158	1,270	1,380	1,491	1,605	1,745	9
- Discrete Manufacturing	3,689	11	4,111	4,601	5,172	5,825	6,580	7,475	13
- Education	276	6	292	311	339	364	392	422	8
- Federal Government	1,444	9	1,576	1,819	1,955	2,077	2,208	2,359	8
- Health Services	1,154	7	1,233	1,325	1,417	1,507	1,585	1,665	6
- Insurance	337	5	353	368	381	395	408	420	4
- Miscellaneous	596	7	640	679	717	759	808	852	6
- Process Manufacturing	779	10	858	950	1,047	1,155	1,282	1,413	10
- Retail Sales	860	7	920	981	1,051	1,122	1,198	1,277	7
- State and Local Government	235	11	261	286	314	345	379	422	10
- Telecommunications	676	13	766	865	985	1,125	1,290	4,471	14
- Transportation	335	9	364	396	427	462	498	535	8
- Utilities	122	11	135	148	163	178	194	212	9
- Wholesale Sales	585	6	620	641	664	688	714	736	3
Cross-Industry Markets	1,384	4	1,440	1,499	1,554	1,604	1,658	1,710	3
- Accounting	499	1	504	510	515	518	520	521	1
- Education and Training	165	12	184	202	220	241	265	291	10
- Engineering and Scientific	147	5	155	162	169	175	181	187	4
- Human Resources	100	3	103	106	108	108	110	111	2
- Office Systems	123	0	123	126	128	128	128	127	1
- Planning and Analysis	0		0	0	0	0	0	0	
- Sales and Marketing	350	6	371	393	414	434	454	473	5

Source: INPUT

B

Forecast Reconciliation

The forecast reconciliations for applications software and turnkey systems are shown in Exhibits A-7 through A-9.

Exhibit A-7

Applications Software Products Market by Industry
1995 MAP Database Reconciliation

Product/ Service Market	1994 Market				1999 Market				94-99 CAGR	94-99 CAGR
	1994 Market (Forecast) ($M)	1995 Report (Actual) ($M)	Variance From 1994 Forecast ($M)	Variance From 1994 Forecast (%)	1994 Market (Forecast) ($M)	1995 Report (Forecast) ($M)	Variance From 1994 Forecast ($M)	Variance From 1994 Forecast (%)	per data '94 Rpt (%)	per data '95 Rpt (%)
Industry Total	27,654	28,003	349	1	56,129	57,642	1,513	3	15	16
Vertical Industry	15,453	15,680	227	1	32,498	33,325	827	3	16	16
- Banking/Finance	2,612	2,615	3	0	3,940	3,950	10	0	9	9
- Business Svcs.	1,401	1,416	15	1	3,251	3,368	117	4	18	19
- Discrete Manufacturing	3,237	3,270	33	1	9,235	9,409	174	2	23	24
- Education	927	940	13	1	1,595	1,728	133	8	11	13
- Federal Gov.	727	816	89	12	882	1,186	304	34	4	8
- Health Svcs.	1,385	1,385	0	0	2,887	2,678	-209	-7	16	14
- Insurance	1,112	1,117	5	0	2,295	2,251	-44	-2	16	15
- Miscellaneous	306	315	9	3	510	524	14	3	11	11
- Process Manufacturing	942	969	27	3	2,114	2,190	76	4	18	18
- Retail Sales	387	389	2	1	710	805	95	13	13	16
- St./Local Gov.	252	255	3	1	460	483	23	5	13	14
- Telecommunications	584	595	11	2	1,502	1,611	109	7	21	22
- Transportation	544	552	8	1	1,062	1,080	18	2	14	14
- Utilities	296	298	2	1	556	544	-12	-2	13	13
- Wholesale Sales	741	748	7	1	1,499	1,518	19	1	15	15
Cross-Industry	12,201	12,323	122	1	23,631	24,317	686	3	14	15
- Accounting	3,307	3,324	17	1	6,402	6,489	87	1	14	14
- Education/Training	266	274	8	3	533	555	22	4	15	15
- Engineering/Scientific	917	930	13	1	1,657	1,709	52	3	13	13
- Human Resources	895	896	1	0	1,445	1,483	38	3	10	11
- Office Systems	3,610	3,649	39	1	7,247	7,689	442	6	15	16
- Planning/Analysis	2,790	2,840	50	2	5,720	5,715	-5	0	15	15
- Sales/Marketing	416	410	-6	-1	627	677	50	8	9	11

Source: INPUT

Exhibit A-8

Turnkey Systems Market by Industry
1995 MAP Database Reconciliation

Product/ Service Market	1994 Market				1999 Market				94-99 CAGR per data '94 Rpt (%)	94-99 CAGR per data '95 Rpt (%)
	1994 Market (Forecast) ($M)	1995 Report (Actual) ($M)	Variance From 1994 Forecast ($M)	Variance From 1994 Forecast (%)	1994 Market (Forecast) ($M)	1995 Report (Forecast) ($M)	Variance From 1994 Forecast ($M)	Variance From 1994 Forecast (%)		
Industry Total	14,750	14,781	31	0	22,140	22,662	522	2	8	9
Vertical Industry	13,376	13,397	21	0	20,487	21,004	517	3	9	9
- Banking/Finance	1,234	1,240	6	0	1,845	1,863	18	1	8	8
- Business Svcs.	1,056	1,069	13	1	1,577	1,605	28	2	8	8
- Discrete Manufacturing	3,655	3,689	34	1	6,377	6,580	203	3	12	12
- Education	277	276	-1	0	385	392	7	2	7	7
- Federal Gov.	1,507	1,444	-63	-4	2,100	2,208	108	5	7	9
- Health Svcs.	1,150	1,154	4	0	1,560	1,585	25	2	6	7
- Insurance	342	337	-5	-1	427	408	-19	-4	5	4
- Miscellaneous	592	596	4	1	784	808	24	3	6	6
- Process Manufacturing	768	779	11	1	1,262	1,282	20	2	10	10
- Retail Sales	852	860	8	1	1,186	1,198	12	1	7	7
- St./Local Gov.	234	235	1	0	378	379	1	0	10	10
- Telecommunications	663	676	13	2	1,202	1,290	88	7	13	14
- Transportation	337	335	-2	-1	494	498	4	1	8	8
- Utilities	126	122	-4	-3	205	194	-11	-5	10	10
- Wholesale Sales	583	585	2	0	705	714	9	1	4	4
Cross-Industry	1,374	1,384	10	1	1,653	1,658	5	0	4	4
- Accounting	501	499	-2	0	524	520	-4	-1	1	1
- Education/Training	162	165	3	2	262	265	3	1	10	10
- Engineering/Scientific	145	147	2	1	177	181	4	2	4	4
- Human Resources	98	100	2	2	106	110	4	4	2	2
- Office Systems	122	123	1	1	130	128	-2	1	1	16
- Planning/Analysis	0	0	0	0	0	0	0	0	0	0
- Sales/Marketing	346	350	4	1	454	454	0	0	6	5

Source: INPUT

Exhibit A-9

Applications Software Products and Turnkey Systems
1995 MAP Database Reconciliation

Product/ Service Market	1994 Market				1999 Market				94-99	94-99
	1994 Market (Forecast) ($M)	1995 Report (Actual) ($M)	Variance From 1994 Forecast ($M)	(%)	1994 Market (Forecast) ($M)	1995 Report (Forecast) ($M)	Variance From 1994 Forecast ($M)	(%)	CAGR per data '94 Rpt (%)	CAGR per data '95 Rpt (%)
Total	42,404	42,784	381	1	78,269	80,304	2,035	3	13	13
Applications Software	27,654	28,003	349	1	56,129	57,642	1,513	3	15	16
- Mainframe	5,935	5,907	-28	0	8,191	8,093	-98	-1	7	6
- Minicomputer	6,904	6,904	0	0	10,384	10,379	-5	0	9	8
- Workstation/PC	14,815	15,192	377	3	37,554	39,170	1,616	4	20	21
Turnkey Systems	14,750	14,781	31	0	22,140	22,662	522	2	8	9
- Equipment	6,184	6,152	-32	-1	8,000	8,167	167	2	5	6
- Software Products	5,658	5,685	27	0	8,861	9,011	150	2	9	10
- Professional Svcs.	2,908	2,944	36	1	5,279	5,484	205	4	13	13

Source: INPUT

1. Applications Software

In looking at the applications software product market as a whole, there was an overall positive variance of 1% for 1994, compared to last year's projections. In most industries, actual 1994 expenditures were as predicted or slightly greater, with a positive variance of 1% to 3%. The only exception was higher-than-anticipated growth in the federal government market, resulting in a positive variance in 1994 of 12%.

The cumulative effect of adjustment in the 1999 forecast for the applications software products market is a positive variance of 3%, as compared with last year's forecast. With the exception of health services' negative variance of 7% and insurance and utilities each with negative variances of 2%, variances in all other subsectors were positive. Most notable were the federal government sector with a positive variance of 34% and retail sales with a positive variance of 13%.

The five-year CAGR for the applications software market increased slightly, from 15% to 16%.

The strongest five-year CAGRs in the industry-specific applications software products markets are projected for the discrete manufacturing, telecommunications, business services and process manufacturing market sectors. Most CAGRs are the same or slightly higher than those noted in the 1994 report. The telecommunications sector will benefit greatly from the structural changes taking place in the industry to allow many more information services products to be delivered directly to the user. Acceleration in the forecasted growth rate for the business services market sector reflects the continuing faster growth rate in the services sector of the U.S. economy.

In the cross-industry applications software products market, variances in the 1994 market growth rate forecast were either neutral or slightly positive. Sales and marketing activity is expected to grow more rapidly, as the capabilities, coverage and use of the Internet increase.

2. Turnkey Systems

For turnkey systems, 1994 expenditures were generally as originally projected. However, expenditures for 1999 show a positive variance of 2%, compared with last year's projections.

Industry-specific variances in actual versus projected 1999 market sizes were minimal, with the largest positive variance in telecommunications at 7% and the largest negative variances in insurance at 4% and utilities at 5%.

In cross-industry areas, there were no negative variances in the 1994 market from the previous year's projections, and an overall positive variance of 1%. Variances in the 1999 market size were between -2% and 4%, with an overall change in total cross-industry market size of only $5 million.

3. Applications Software Products and Turnkey Systems

Variance in the reported 1994 market size for the combined turnkey systems and applications software products market was a positive 1%. The forecast 1999 market size shows a positive variance of 3%. The five-year CAGR forecast for 1995-2000 continues to be 13%, as projected in the previous report.